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HOW MUCH OTOLARYNGOLOGY SHOULD BE TAUGHT TO GENERAL PRACTITIONERS?

CHAIRMAN'S ADDRESS

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Medicine cannot exist under the programs of educational institutions that are not conscious of the changing plan of medicine. There has been a swing in medical training toward giving greater recognition to the general practice of medicine. All fields of medicine are now being called on for training medical students and interns more and more in the specialties of medicine. If we cannot change our teaching programs, we shall fall short of our duty.

On the whole, all medical education is similar. No fixed way for the student or the instructor to master the clinical or basic sciences has ever been established. In many institutions the present trend is toward the training of general practitioners of medicine. This means that the training program should be well-rounded, and no particular phase of medicine should be neglected. In the development of such a training plan, in my opinion, certain fields of medicine have been sacrificed in favor of other fields. It is hoped, by stressing the field of general medicine, that illnesses with which patients are most likely to be afflicted will receive considerable attention. Many persons are afflicted with upper respiratory tract infections. Some observers have estimated that 25% of all illnesses are of upper respiratory tract origin or are sequelae of such diseases. This subject should be of great interest to students who are being trained for general practice. The training program in this field should prepare the practitioners to care for such diseases.

Medical schools attempt to teach each subject in relation to its importance to the other subjects being taught. It is the purpose of this discussion to propose that more time be set aside for the teaching of certain subjects and to discuss the methods that are being used to ascertain if the intended purpose is being accomplished. It is my objective to discuss the amount of time that should be alloted for teaching otolaryngology to medical students so they will be prepared for this part of their general practice of medicine.

A questionnaire about training received in this field was sent to the presidents of the 44 chapters of the American Academy of General Practice, 34 of whom responded. It was thought this group would be able to give valuable information on the subject. Following is a list of the questions asked and the answers received:

1. Physical diagnosis in otolaryngology: (*a*) How much time was spent in presenting this phase of the subject? Most of the answers to this question were well summed up by this one answer: "It was more or less a brush-off." (*b*) Do you think the time alloted to this phase of the subject was sufficient? Almost the whole group was of the opinion that the time given was insufficient.

2. Were you first taught what the normal findings were in the ear, nose, and throat? Most answered to the effect that they were supposed to read about this in a text book, but they were not shown the actual structures.

3. Were you given pathological or abnormal conditions to examine at first? Seventy-five percent answered that they were given such cases.

4. What functional hearing tests were you taught, and were they enough to give you an idea of what type of hearing loss the patient had? Most of the group answered that a watch test was the method taught; a few stated that whisper and spoken voice tests were taught, and many said they had not been trained to do a decent hearing test.

5. Were you taught how to inspect a normal larynx with a laryngeal mirror and what you were expected to see, or did you have to learn this later? The majority answered that they had never seen a normal larynx, or if they did look at one, they did not know what they were seeing.

6. Were you taught the normal landmarks of the membrana tympani? Nearly all answered that they were taught these landmarks didactically but that they did not have a chance to observe them.

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7. Were you taught how to make a good examination of the normal nasal cavity? The answers to this question were evenly divided.

8. How many hours of didactic lectures did you have? Many who answered this said they did not remember; others said it varied from 4 to 50 hours, but the majority said under 8 hours.

9. Did you learn more otolaryngology from the outpatient clinic if it was conducted by good instructors, or did you learn more from didactic lectures? Nineteen of the 34 said they learned more in the outpatient clinic, especially when they had good instructors.

10. In the examination of patients on the ward or during your clerkships, did you apply the knowledge you had gained in otolaryngology to your examination? Nearly all answered that they had.

11. Do you perform your own tonsillectomies? Eighteen replied that they do perform their own tonsillectomies; nine do not, but three of these formerly did so.

12. To do good tonsillectomies and adenoidectomies, how much training do you think one should have? The following are the answers I received:

General rotation internship, followed by a year of residency.

Depends on opportunity to do this work under good supervisor. At least 6 months with a good preceptor.

A good instructor can teach a good intern the proper technique in a week or less.

The operator should have done at least 25 tonsillectomies satisfactorily, before permitting him to continue on his own.

Five local and 5 general with good instruction should be very adequate.

A minimum of 25-50 tonsillectomies and adenoidectomies under supervision in internship.

This is the $64.00 question. Six months at least under good supervision, not just 10-15 tonsillectomies and adenoidectomies.

Not so much didactic but much assisting with a good operator.

Six months assisting, and 20 solos.

I did 8 or 9 and have done many hundreds since then. I believe that is enough with a good teacher.

Training by a competent man until such time as he believes you can safely do the operation.

Depending on the individual.

Several years.

This would vary so much with the individual and his aptitude that what one could learn in 3 months, another could not master in 2 years.

Three months service in hospital with a good ear, nose, and throat service. Do at least 50 under supervision.

A minimum of 80, doing 15 to 20 operations daily.

More than a general practitioner has with 1 year hospital training.

Three to four months on ear, nose and throat service in internship.

To do about 10-12 under supervision in internship, after good medical school training.

How much is enough? I think type of training, instructors, available material and intern's skill are important factors.

Supervision until skilled. Time limit uncertain.

At least 3 months of internship in this phase of training (instead of 1 month).

About 3 months.

Three months of ear, nose, and throat surgery.

At least six months training is necessary.

The answers to question 12 indicate that the greater number of this group of general practitioners feel that a physician should have adequate preparation to do tonsillectomies and adenoidectomies.

13. When hard-of-hearing patients consult you, do you attempt to find out what kind of hearing difficulties they have? Most answered in the affirmative and said that if the patients had a conductive or perceptive disturbance they referred them to an otologist for further care.

14. On the whole, would you have liked, as a medical student and during your internship, to have had more training in otolaryngology? This question was answered with a unanimous yes.

The questionnaire reveals the fact that these busy practitioners of general medicine think their instruction in otolaryngology was meager, and they would have desired more. What they learned was obtained through the training they received when checking patients assigned to them for study.

Dr. Dean M. Lierle,[1] in a discussion before the Triological Society regarding the training of undergraduate students, had this to say:

> The general practitioner seems to be taking over a portion of the minor procedures in our field. This is particularly true in rural areas and smaller cities. I know of some places in the middle west where 80 per cent of the tonsillectomies are done by general practitioners. In most instances they are done well. The general practitioners also are doing myringotomies and treating acute rhinitis, acute tonsillitis, peritonsillar abscesses, and occasionally acute sinus disease. One cannot offer any objection if the particular physician is capable of doing the work. I have felt for a long time that the day is approaching when the general practitioner will be trained to do these simple procedures. Certainly the trend is toward more complete preparation in undergraduate teaching as well as in graduate training for the general practitioner. In some instances now their training includes otolaryngology.
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> A survey by a committee of the American Board of Otolaryngology with Dr. L. R. Schall as chairman concerned with the undergraduate training in the medical schools of this country revealed increased interest in our field. Answers to the following questions were returned from forty-three institutions: 1. Does your department teach anatomy of the ear, nose, and throat to medical students? Affirmative answers came from 23 institutions, negative answers came from 13, and five said the teaching was done in review. 2. In teaching physical diagnosis do you teach the technic of examination in otolaryngology? There were 24 affirmative answers, the number of hours varying from two to 72. 3. Do you give formal lectures? 43 reported yes. The number of lectures ranged from six to 44. 4. Do you give instruction by section in either outpatient department or the clinic? The hours varied from eight to 373 in the outpatient department.
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> This information was very revealing, and Dr. Schall's committee recommended the following minimal requirements for undergraduate teaching in otolaryngology: 1. That the anatomy of the ear, nose, and throat be taught as part of the regular anatomy instruction in the freshman year. 2. That two hours of orientation and four hours of physical diagnosis be required in the sophomore year. 3. That forty hours of didactic and clinical instruction be included in the junior year, arranged according to the facilities available and at the discretion of the chairman of the department. 4. That elective courses be offered in the senior year.

In my presidential address before the American Academy of Ophthalmology and Otolaryngology in October, 1948,[2] I reported on a questionnaire I had sent to the heads of the departments of otolaryngology in 87 medical schools in the United States and Canada. In this study it was found that the amount of instruction that undergraduate students are receiving is indicated by the number of clock hours that are devoted to didactic and

1. Lierle, D. M.: Present Status and Future of Otolaryngology, Ann. Oto. Rhin. & Laryng. 59: 496 (June) 1950.
2. McCaskey, C. H.: Address of President: Present Status of Otolaryngological Education, Tr. Am. Acad. Ophth. 53: 5 (Sept.-Oct.) 1948.

clinical teaching. The fewest number of hours reported was 5 and the largest number of hours was 68. One institution reported that it has no didactic teaching. Eight schools gave no answer to this question. The total number of hours reported devoted to didactic teaching was 1,046 or an average number of 20 hours for each school in the group. There are a few teachers who think the didactic lectures are nonessential, but apparently most institutions seem to think they are of great value.

The number of clock hours spent by undergraduate students in the outpatient clinics, as reported by 59 institutions, was as follows: The largest number of hours reported was 90, and the smallest number of hours reported was 4. The total number of clock hours devoted to outpatient teaching by the 59 institutions was 2,461 or an average of 47.3 hours. This is more than double the number of hours devoted to didactic teaching. Six did not answer, and only one said they have no hours of outpatient clinical teaching. Thus the answers would seem to indicate that more emphasis is placed on outpatient clinical teaching. As to the number of clock hours required for attendance at the surgical clinics, it seems that the majority of the institutions require attendance in these clinics, but no credit points are given.

Graduate education in medicine begins with the internship and continues until the physician feels that his knowledge has been augmented to such an extent that he is satisfied he is capable of doing the work for which he has been trained. Graduate training usually is carried out in institutions or hospitals that are under the supervision of teaching institutions. That the program of the general practice of medicine is occupying an important place in medical training at the present time is exemplified in the answers to question 12 of my questionnaire.

In the accompanying table is a summary of undergraduate instruction in otolaryngology in 12 medical schools, as reported by Dr. L. R. Boies,[3] in 1950.

I think it is clear that more time is gradually being allotted to otolaryngology in undergraduate training, and this has been especially true during the last four or five years. Those who answered the questionnaire, as a whole, said that they had a limited amount of otolaryngological training and had naturally overlooked many things of importance until they learned them, as many said, "the hard way."

I wish to present the following plan, which I think would be workable, for otolaryngological instruction for medical students: 1. More attention should be given to the detailed anatomy and physiology of the ear, nose, and throat in the freshman year. 2. The examination of normal structures and the use of instruments and their

Summary of Undergraduate Instruction in Otolaryngology in Twelve Medical Schools

	No. of Hours	Year
University of California		
Physical diagnosis	2	Sophomore
Lectures	4	Junior
	8	Senior
Outpatient clinic	12	Junior
	12	Senior
Inpatient teaching	12	Junior
	12	Senior
Total	62	
University of Chicago		
Physical diagnosis	2	Sophomore
Lectures and seminars	16½	Senior
Outpatient clinic	66	Senior
Total	84½	
University of Colorado		
Physical diagnosis	10	Sophomore
Lectures	12	Sophomore
Outpatient clinic	36	Junior
Total	58	
Columbia University		
Gross anatomy	1	Freshman
Special sense anatomy	3	Sophomore
Clinical anatomy	2	Sophomore
Physical diagnosis	2	Sophomore
Lectures and demonstrations	10	Junior
Outpatient clerkship	30	Junior
Applied anatomy	6	Junior
Miscellaneous instruction	6	Senior
Total	60	
Baylor University		
Lectures and demonstrations	6	Junior
Inpatient study	17	Junior
Outpatient clinic	18	Senior
Total	41	
University of Minnesota		
Physical diagnosis	2	Sophomore
Lectures and demonstrations	24	Senior
Outpatient clinic	30	Senior
Inpatient study	15	Senior
Total	71	
Stanford University		
Physical diagnosis	4	Junior
Lectures	22	Senior
Outpatient clinic	20	Senior
Inpatient study	10	Senior
Total	56	
Syracuse University		
Physical diagnosis	2	Sophomore
Preview of otolaryngology	6	Sophomore
Outpatient teaching	40	Junior
Total	48	
University of Toronto		
Physical diagnosis and anatomical review	15	Sophomore
Lectures	12	Senior
Inpatient and outpatient study	18	Senior
Total	45	
Tulane University of Louisiana		
Lectures	4	Sophomore
	8	Junior
	6	Senior
Outpatient clinic	12	Senior
Total	30	
University of Virginia *		
Physical diagnosis	2	Sophomore
Lectures	16	Junior
Clinic work and discussion	24	Junior
Inpatient study (wards)	24	Junior
Total	66	
Washington University		
Physical diagnosis	6	Sophomore
Lectures	11	Junior
Outpatient clinic	24	Junior
ENT pathology conference	2	Junior
ENT radiology conference	2	Junior
Total	45	

* An elective course in surgical anatomy of the ear, nose, and throat (40 hours) is offered in the senior year.

3. Boies, L. R.: Symposium on Undergraduate Instruction in Otolaryngology: Introduction, Supplement to Tr. Am. Acad. Ophth., Oct. 8, 1950, p. 3.

practical application should be taught in the sophomore year. This part of the program should require at least 20 hours (the procedure of using a head mirror, which many consider simple, is not accomplished rapidly but requires time). If the program is well carried out, the student is ready to begin the next part of his schedule in his junior year. 3. In the junior year he should have his didactic training, one hour a week, for one semester. The didactic teaching should be well correlated with clinical teaching. 4. During his senior year, in his clerkships, all patients assigned to him should have an otolaryngological examination, under supervision when possible. If this plan is carried out, it should make the student conscious of otolaryngological problems in a majority of the cases that come under his observation. Finally, during his internship, he will continue to do this as a part of his physical examination of patients.

My plea is, therefore, that more attention be given to otolaryngology for students desiring to go into general practice, especially since at least 25% of their practice will have to do with upper respiratory tract infections or their sequelae. In conclusion, I would like to quote two statements made by Dr. Gordon D. Hoople [4] before the teachers' section of the American Academy of Ophthalmology and Otolaryngology in a discussion on undergraduate training: "We lay great stress on the ability of the student to see what he is looking at and to have some understanding of it. We do not, of course, try to make a specialist of him. . . . An occasional self-made diagnosis is worth one hundred lectures!"

20 N. Meridian St. (4).

4. Hoople, G. D.: Symposium on Undergraduate Instruction in Otolaryngology: Program at Syracuse University, Supplement to Tr. Am. Acad. Ophth., Oct. 8, 1950, p. 10 and p. 19.

AMERICAN STUDENTS IN FOREIGN MEDICAL SCHOOLS

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A significant increase in the number of American students who are going abroad for medical training has been reported since the end of World War II. Evidence of this increase has come from many sources, particularly from agencies, such as state licensing boards, medical specialty boards, some governmental agencies, and hospitals, that deal with these students and with the American graduates of foreign schools. Reports in the press have stated that American students were "flooding" certain of the European schools, while other sources have indicated that these students have constituted a problem for some foreign schools because of their numbers and for other reasons. Although the sources mentioned suggest that the number of students studying abroad is rather large, no accurate information as to the actual numbers has been available, nor has it been known, accurately, in what schools they were enrolled.

Consequently, it was decided in the summer of 1951 to undertake the brief survey that is reported here. The 176 foreign medical schools to which questionnaires were sent included virtually all of the schools outside the Russian sphere of influence. The Canadian schools were not included since all of them are named in the Council on Medical Education and Hospitals' list of approved medical schools, and the number of American students that they enroll is reported annually in the Educational Number of THE JOURNAL. Each foreign school was asked to report on the number of American students enrolled in each class, the total number of students in each class, the academic performance of the Americans as compared with native students, the previous academic preparation of the Americans, and any special problems that the Americans might have created for the school. Of the 176 schools to which questionnaires were sent, data have now been received from 124. Replies received directly from the schools have been supplemented by additional information provided by the Department of State and the National Selective Service System. While data are complete or nearly complete for many of the countries of Europe, no information was received from 7 schools in France, 11 schools in Germany, and 8 schools in Italy.

A total of 1,121 American students were reported enrolled in foreign medical schools. These students were reported by 78 medical schools in 21 different countries. The distribution of students by countries is shown in table 1. Switzerland, with 363 American students, accounts for 32.4% of the total. The second largest group, 222, was enrolled in Spanish schools, and the third largest, 134, in Italian schools. All of the students in Spanish schools for whom figures are available and 54 of the 68 students in Mexican schools are from Puerto Rico. The 21 foreign schools that had 10 or more American students are listed in table 2. Total student enrollments, when available, are also given. There were 7 schools that had more than 50 Americans: the Universities of Madrid, Geneva, Bern, Bologna, Fribourg, Zurich, and Leiden. The 150 students at Madrid, all from Puerto Rico, constitute the largest group; next largest is the group of 136 students at the University of Geneva. Complete statistics on total student enrollment were not received; however, the 70 Americans at Fribourg constituted 43.8% of the total student body, the 86 at Bern comprised 45.3% of two classes, and the 136 at Geneva represented 20.6% of all medical students in that school. On the other hand, the 31 Americans at the University of Paris constituted a very small percentage of a total medical student body of 6,988. The 26 Americans at the University of Havana formed a similarly small fraction of that institution's total of 3,392 medical students.

Figures for the number of American students in each class were returned for only 438 of the total American group. These are summarized in table 3. Because the data are incomplete and the rate of attrition for all of

Read at the Annual Congress on Medical Education and Hospitals, Chicago, Feb. 12, 1952.

Associate Secretary, Council on Medical Education and Hospitals, American Medical Association.

these schools is not known, no accurate estimate can be made from these data as to whether the number of Americans enrolling in foreign schools is increasing or decreasing. Nevertheless, it is of some interest to note that, in those schools that furnished data by classes, the number of Americans increased from 23 in the sixth or final year to 144 in the third year, 139 in the second year, and 77 in the first year. If these figures constitute a representative sample, there has then been a sharp increase in the numbers of Americans enrolled in the past three years. This conclusion gains support from the comments received from Swiss and Belgian schools, which have, during the past several years, received large numbers of applications from Americans.

TABLE 1.—*Distribution of American Students in Foreign Schools*

Country	No. of Schools	No. of Replies	Schools with American Students	Total No. of Students
Switzerland	6	5	5	363*
Spain	10	9	9	222*
Italy	22	14	10	134
Netherlands	4	3	3	74
Mexico	16	7	5	68*
Germany	25	14	8	62
France	16	9	7	44*
Ireland	5	5	5	29
Cuba	2	2	2	27*
Australia	3	3	3	24
Austria	3	3	2	24
Great Britain	25	21	9	17
Belgium	4	3	2	11
Dominican Republic	1	1	1	9*
Chile	2	2	1	3*
Denmark	1	1	1	3
Lebanon	2	2	1	2
Uruguay	1	1	1	2
Argentina	4	1	1	1*
Haiti	1	1	1	1
Philippine Islands	2	1	1	1
Brazil	5	3	0	0
Colombia	3	3	0	0
El Salvador	1	1	0	0
Finland	2	2	0	0
Honduras	1	1	0	0
Iceland	1	1	0	0
New Zealand	1	1	0	0
Norway	2	2	0	0
Sweden	3	1	0	0
Venezuela	2	1	0	0
Totals	176	124	78	1,121*

* Included in Total Number of Students are the following figures for students from Puerto Rico supplied by the Selective Service System.

Spain	222	Cuba	7
Mexico	54	Dominican Republic	9
France	5	Chile	3
Switzerland	2	Argentina	1
			303

Comments on the academic performance of the American students did not, on the whole, contribute much enlightening information. Many deans either made no comment or stated that their experience with American students had not been extensive enough to provide a basis for judgment. Most comments indicated that the American students were diligent, their conduct satisfactory, and their academic performance equal to that of the average native students. This last remark, if applied to certain European schools where the attrition rate in the first three years may range as high as 50 to 75%, could scarcely be construed as complimentary. An Irish school classed the Americans as superior to native students, and one Dutch school rated them worse. One foreign university official, after stating that schools in his country want American students, remarked that they did not expect to get "the cream of our premedical crop" but that they hoped to "get some of the milk." Two schools apparently feel that they have been "getting skimmed milk—and a bit curdled at that." They stated that they felt their American students were largely persons of inferior scholastic ability who had been rejected by the American schools.

TABLE 2.—*Foreign Medical Schools with Largest Numbers of American Students Enrolled*

Name of University	American Students Enrolled	Total Enrollment
Madrid (Spain)	150	...
Geneva (Switzerland)	136	660
Bern (Switzerland)	86*	190*
Bologna (Italy)	84	1,942
Fribourg (Switzerland)	70	160
Zurich (Switzerland)	59	857
Leiden (Netherlands)	50	...
Autonoma (Mexico)	49	...
Heidelberg (Germany)	32	...
Paris (France)	31	6,988
Havana (Cuba)	26	3,392
Melbourne (Australia)	18	1,128
Padua (Italy)	17	...
Utrecht (Netherlands)	17*	223*
Gottingen (Germany)	16	...
Vienna (Austria)	14	300
Basel (Switzerland)	12	505
Nuevo Leon (Mexico)	12	...
Cork (Ireland)	10	186
Innsbruck (Austria)	10	666
Galway (Ireland)	10†	120†

* Two classes. † Three years.

The previous academic preparation of the American students was, in general, considered satisfactory. Several outstanding schools characterized it as excellent. On the other hand, two Irish schools referred to it as superficial and one Mexican school stated that it was poor. One Australian school found our students badly prepared but attributed this to the fact that only second rate American students had applied for admission. The commonest problem that American students presented was their lack of facility in the foreign languages in which instruction is given. Many of these students, because of their language deficiency, had difficulty in following the courses of instruction and in dealing with patients to whom they are assigned as clinical clerks. In many schools where instruction is given in a language other than English, no special provision is made for students who cannot speak the native tongue. It is difficult to

TABLE 3.—*Enrollment of American Students by Classes*

	Academic Year 1951-1952					
Country*	1st	2nd	3rd	4th	5th	6th
Australia	10	9	3	2	..	1
Belgium	..	2	3	..	1	..
Cuba	7	4	5	4	2	3
France	27	7	1	3	2	..
Great Britain	1	..	5	1	2	1
Ireland	11	9	6	2	1	..
Italy	1	49	36	12	16	17
Lebanon	1	1	..	..	..	..
Mexico	4	7	4	..	1	1
Netherlands	15	42	4	4	2	..
Switzerland	..	9	77	..	..	..
Total	77	139	144	28	27	23

* Only some of the schools supplied this information; therefore, the totals within each country differ from those found in table 1.

see how a student, working under such a handicap, can possibly obtain a satisfactory medical training. One may also wonder how a foreign university can justify the admission of such ill-prepared students.

A number of the schools commented on the large number of applications that they are receiving from Americans and on the difficulty that they experience in selecting American students for admission. Many of these schools have apparently not been familiar with the academic standards and practices of American colleges and universities from which applicants come, and they are not well acquainted with American premedical requirements. The problem of coping with large numbers of applicants has evidently become acute, particularly in those European schools that traditionally admit to the first medical year all students who satisfy the minimal academic requirements for admission. Some of these schools are exceedingly reluctant to abandon tradition and to limit enrollments; however, since most European schools are already hard pressed to accommodate native students, it has become apparent to some that limits will have to be imposed on the number of Americans who can be accepted. The University of Geneva has already organized, in this country, a committee to screen its American applicants, and a similar committee to aid in the selection of students has been proposed for the Belgian schools.

In this connection, it should be mentioned that the mere fact that some European schools admit all applicants with minimal academic qualifications should not be interpreted as a lack of any method of student selection, for screening of students does take place after admission. In some schools, as previously mentioned, as many as 50 to 75% of all students admitted will be eliminated during the first three years on the basis of competitive examinations, a fact that has not been fully understood until too late by many of the American students. A question may be raised as to why foreign schools have chosen to admit so many American students, in some instances in numbers sufficient to overtax the available educational facilities. No single answer to this question can be given. In some instances, the schools have apparently felt obliged, because their countries have received substantial military and economic aid from the United States, to accommodate as many American students as possible. In other countries, particularly where the numbers of full-time teachers is small and where instruction is given cheaply to large classes, mostly by didactic methods, the profit motive could be a factor.

CONCLUSION

While the statistics that have been reported are admittedly incomplete, they demonstrate clearly that a significant number of American students are now enrolled in foreign medical schools, especially in the schools of Switzerland, Spain, Mexico, and the Netherlands. It is probable that many more students are enrolled in Italian schools than are accounted for by the present figures. Comment has been made on the problems created by these students in some institutions because of overcrowding and because of the difficulty that foreign schools experience in the selection of American students. Reference has also been made to the handicap under which American students are placed, in many of these schools, owing to lack of facility in the foreign languages in which instruction is given.

It is not known how many of these students have elected to study abroad rather than at schools in this country; however, it seems likely that many are students who were unable to gain admission to American schools. Some are capable students; others could not meet the academic requirements for admission in this country. It is evident that the licensing authorities in this country will, for some time to come, be faced with a difficult task, as they attempt to evaluate medical graduates returning to the United States from 21 different countries.

There is reasonable assurance as to the good quality of medical education that these students are receiving at some foreign schools, notably at those schools named in the "List of Foreign Schools," which has been prepared by the Council on Medical Education and Hospitals and the Association of American Medical Colleges. Yet many will have obtained their training at institutions whose standards are not well known in this country or at some others whose standards, it is believed, may not be comparable to our own. In this latter group are schools that never have been outstanding, as well as a number of formerly reputable institutions that have yet to recover from the devastation of war. It is most important that continuing care be exercised in assessing the competency of these foreign medical graduates as they return to internships in this country and as they apply for licensure to practice.

The Council expects to continue this study of American students in foreign medical schools with a view to obtaining further information concerning their numbers, their academic competence, and any problems that they present for the foreign schools. The Council, in collaboration with the Association of American Medical Colleges, will also, in developing the "List of Foreign Schools," continue to seek additional reliable data about foreign medical schools for the use of those agencies or persons in this country who find such information helpful.

Masterpiece of Clinical Research.—Withering is an outstanding example of the eighteenth century scientist, often a physician, occasionally a gifted amateur, whose keen intelligence led to observation, analysis, and theorizing as to the basis of all kinds of natural phenomena, unimpeded by the barriers set up by increasing specialization in the first half of the next century. Today, trained as we have been not to poach upon the sacred preserves of other scientific disciplines, we cannot but marvel at the broad attainments of Withering, at the intensity of his curiosity, and at his expertness in diverse fields, all the while carrying on an extensive medical practice. Nor, in view of the foregoing, is it surprising that the fundamental observations of An Account of the Foxglove have never been contradicted and that increasing knowledge has confirmed rather than overthrown the opinions expressed in this masterpiece of clinical research. Looking back over one hundred and fifty years we see in William Withering the embodiment of our present-day ideal, the physician who is equally at home in the laboratory and at the bedside.—Frederic D. Zeman, William Withering as a Mineralogist, *Bulletin of the History of Medicine*, November-December, 1950.

WOUND BALLISTICS AND BODY ARMOR

Lieut. Col. Robert H. Holmes (MC), United States Army

Physicians spend an endless amount of time determining the etiological agents and the pathogenesis of disease. This is intrinsic to their progress. In a world of armed conflict in which the interval between wars has assumed a startling brevity, it is cogent that physicians also be informed about modern firearms and their missiles, for these are the etiological agents of wounds. Indeed, it is fundamental that they have full knowledge of wound production, because the medical profession occupies a key position in unraveling the natural history of one of man's oldest scourges, the mortality and morbidity attendant on war. Furthermore, many of the challenging problems related to wound analysis of military casualties may suddenly be translated to the dread potential of mass civilian catastrophe.

Basically, a wound ballistic study is an analysis of the effects of the various firearms and their missiles on human tissues or tissues of experimental animals. Modern warefare has become so versatile and changes in weapons so rapid that for military purposes a study of this nature must be carried out continuously in the experimental laboratory and in every theater of combat operations. It must range from the simple missile laceration to the complicated effects of atomic blast and radiation and from the first medical care in a battalion aid station to the point of maximal recovery in a general hospital. As each new weapon is invented, its wounding properties must be carefully evaluated. There is necessity for identification of varied weapons and missiles, knowledge of their velocities, configuration, mass relative incidence, and lethality. The comparative frequency of anatomic regional involvement and a proper classification of wounds must also be known. The relationship of specific combat tactics to wound incidence must be understood, and the factors of explosion distance and range carefully investigated. The study must also include an evaluation of the ancillary effect of terrain and weather and the mode, time, and distance of medical evacuation in its relation to wound treatment, wound contamination, and other variables influencing wound repair.

The term wound ballistics refers to a branch of terminal ballistics that deals with the motions of projectiles or bullets and other missiles, primarily shell fragments, and their role in wound production. The specific subject of ballistics is divided into interior ballistics, or the motions of the projectile within the gun, and exterior ballistics, the motions of the projectile outside of the gun. Wound ballistics, therefore, as a branch of terminal ballistics is concerned with the motions and effects of projectiles or other missiles on a target, particularly animal tissues, upon and after impact. Recent studies have been directed to the analysis and synthesis of information obtained from a study of men wounded or killed in action, those wounded and dying later, and carefully controlled experimental wound production in laboratory animals. These data currently have been collected from three separate missions to Korea and from research at the Medical Laboratory, Army Chemical Center, Edgewood, Md.

In the study of wound ballistics, it is essential to know precisely the identity and behavior of the agents, or missiles, that produce wounds, the circumstances of wounding, and the specific nature of the wound as well as any unique features of its repair. In experimental research these factors can be closely controlled, but on the battlefield it is necessary to employ strategems of varied design in order to collect significant information. Procedures that yield such data include direct observation of wound incidence, witness testimony, interrogation of casualties, gross and microscopic examination of wounds, surgical exploration of wounds, x-ray examination of wounds and missiles, recovery and identification of wounding missiles, and correlation of combat tactics and wound incidence.

The effects of weapons and their missiles upon human and other animal tissues have intrigued observers for several centuries. Experimental studies on the action of bullets have been recorded from about 1880 to the present, but it is only within the past decade that controlled studies on the effects of shell fragments have begun to yield significant information. This is partially explained by the fact that until World War I the number of wounds caused by shell fragments was small compared with their present predominance in modern warfare.

Before World War I, fighting was done at relatively close quarters, and bullets of large caliber and low velocity were used with considerable effect. Frontiersmen and hunters, however, had learned long ago to use smaller caliber bullets and higher velocities when accuracy and killing at a longer range were necessary. Col. L. A. LaGarde, United States Army Medical Corps, performed the first extensive ballistics experiments, using animals, cadavers, and fluid-filled cans. By utilizing these data he was able to predict the character of the wounds observed in the Spanish-American War, which were probably the least destructive of any recorded in military conflict. The bullets in use weighed about 200 grains (12.93 gm.), were of .30 caliber, and had a muzzle velocity of about 2,000 ft. per second. Following the introduction of the lighter pointed bullet, weighing about 150 grains (9.70 gm.), with a muzzle velocity of 2,700 ft. per second, LaGarde correctly predicted that the wounds of World War I would be more severe.

Col. Louis B. Wilson, United States Army Medical Corps, summarized in the "Medical History of World War I" the basic knowledge of wound ballistics available at that time; succeeding work also served to confirm his observations, some of which are: "The wounding effects of a bullet depend on (*a*) the amount of energy it transmits to the tissues, (*b*) the velocity of the transmission, (*c*) the direction of the transmitted energy, and (*d*) the density of the tissues. The first three of the factors depend almost entirely on the energy, velocity and shape of the bullet."

Read before the Section on Military Medicine at the 101st Annual Session of the American Medical Association, Chicago, June 11, 1952.

More recently, Brig. Gen. George R. Callender (retired),[1] while assigned to the Army Medical Museum (Armed Forces Institute of Pathology), conducted experiments to determine the loss in velocity that occurred when a bullet passed through animal tissue. It is after his pioneer effort that most of the current investigative procedures are fashioned. His work was done on anesthetized animals, with an electric chronograph to measure impact and residual velocities. By the use of inanimate media and plaster reproductions, he confirmed the architecture of the missile passage, first demonstrated by German investigators, as an explosive, expansile cavitation many times the diameter of the missile, producing widespread tissue destruction far beyond the actual line of passage. He also made the following significant observations: 1. The traverse time of a missile in passage through tissue is far less than the disturbance time or consequent physical agitation of that tissue by the missile. The time ratio is about 0.00001 second: 0.003 second, or 1:300. 2. The rate of energy transmission by a missile to a tissue is directly related to wound severity and is more important than the total amount of energy transmitted. 3. Bullets entering fluid, or near fluid viscera, transmit energy in all directions according to the laws of hydraulics. 4. When a spinning bullet passes from a medium of air into a denser medium of tissue, the gyration, or yaw, is increased, thereby adding to the delivery of energy and wound severity. 5. A wound produced by a missile is modified by the intrinsic character of the tissue, that is, elasticity, cohesiveness, brittleness, density, or specific gravity, and by the length of the missile tract.

Thus far the motions of projectiles, or bullets, have been examined, and undoubtedly many of the features are applicable in degree to the motions and effects of shell fragments. Due to military classification many of the experimental data are restricted, but certain facts pertaining to the motion and effects of shell fragments are readily realized. Obviously, they do not have the smooth configuration or the gyroscopic motion of bullets; therefore, in spite of superior initial velocities greater than rifle bullets, 4,500 ft. per second or more, air resistance causes a more rapid loss in velocity. The degree of penetrability depends largely on such high velocities, because shell fragments producing war wounds average less than 50 grains (3.24 gm.) in mass. The chance factors of configuration and angle of incidence also operate to determine penetrability. For example, a fragment striking the target with its edge rather than its broad surface naturally penetrates more easily. Furthermore, the irregular configuration, smaller mass, and lack of gyroscopic motion of the shell fragment cause an increase in traverse time and greater absorption of kinetic energy by the tissue, but the length of time of absorption is greater and the length of the missile tract less than ordinarily would prevail with a smooth, pointed, spinning bullet of equivalent velocity. All these factors vary with the density of the tissue.

1. Callender, G. R., and French, R. W.: Wound Ballistics: Studies in the Mechanism of Wound Production by Rifle Bullets, Mil. Surgeon **77**: 177-201, 1935. Callender, G. R.: Wound Ballistics: Mechanism of Production of Wounds by Small Arms Bullets and Shell Fragments, War Med. **3**: 337-350, 1943.

TACTICAL CIRCUMSTANCES OF WOUNDING

Battlefield casualty rates rise and fall in direct relation to the type of combat tactics. In the Korean action, which has been chiefly one of maneuver, fierce fights occur primarily for controlling landscape. In all previous wars generalizations concerning casualty prediction have been treacherous. Korea is no exception. Both sides have suffered staggering losses from massive withdrawals and assaults; however, both sides have carried on similar action with minimal losses. Patrolling is slow and ceaseless and so is its casualty incidence. It is interesting to note the amazing consistencies among the many vagaries of warfare. For instance, there has been an average of 350 casualties per week during the winter months, including about 75 killed in action. This indicates a ratio of one killed to four plus wounded. Presumably, this represents a fairly accurate medical estimate of stabilized mountain warfare employing primarily aggressive patrolling and limited offensive combat tactics. Strangely enough, however, this ratio is close to that for all casualties sustained in the Korean conflict under all tactical circumstances. Furthermore, this ratio of one killed to four plus wounded represents the mortality-morbidity ratio of World War II. It is also interesting to note that the anatomic regional frequency of wounding has been almost the same in the Civil War, World War I, World War II, and the Korean action.

Enemy losses have been estimated at from 10 to 40 to our 1. This wide difference has existed largely because of superior artillery fire and decisive air coverage. Such circumstances have the potential of sudden change. The nature of the military objective determines the character of weapons and combat tactics used. Our avowed objective has been to "kill the enemy"; his objective has been to sap our logistic strength.

One of the first facts to emphasize in a consideration of the circumstances of wounding is that the infantry comprises only 20% of total army strength, yet it suffers about 70% of the total casualties. The medical problem of battlefield recovery and evacuation, therefore, must begin with an understanding of how, when and by what these soldiers are wounded.

Certain features surrounding the circumstances of wounding are of great importance in the medical analysis of wounds and furnish critical data for the various allied arms and services. This information can be readily translated by Intelligence and Ordnance and can afford considerable aid in the interpretation of enemy tactics and the relative lethality of weapons; it also aids in estimations of personnel demands under precise conditions of combat. Indeed, valuable hints thus obtained as to how and when casualties occur may find their way into training doctrine and thereby contribute to the total effort of preventive medicine in conserving the fighting strength. Such information is also essential in the medical estimate of a selected combat situation.

COMBAT TACTICS RELATIVE TO WOUND INCIDENCE

Combat tactics in Korea, in spite of the stigma of stalemate, have had a challenging versatility, ranging from massive withdrawal to all-out assault. Such a gamut of action may be considered under the following classifica-

tions: patrolling, perimeter defense, assault, limited offensive, holding action, or defense, withdrawal, and envelopment. Each type of combat implies variable wounding circumstances, variable weapon frequency, and, therefore, variable wound type and wound distribution.

Patrolling.—Since the mission of a patrol is to leave a secure base and seek out the enemy, one can anticipate certain hazards that may contribute to the casualty incidence. First, there is the land mine. Such a mine may be one of ours, representing captured materiel, If so, it is usually metallic, but the wounding effect is primarily blast, with the exception of the "bouncing Betty." Enemy mines are frequently wood-box with triple charge TNT, and they also wound by blast effect. If a metallic missile strikes bone, the fracture is predominantly comminution with some splinters of small dimensions showing wide displacement; however, fractures due to blast are distinctive in having splinters of larger dimension with less displacement and less comminution. The presence of shock following blast or concussion is far more common and more severe than that following wounds of similar magnitude due to shell fragmentation. Such wounds naturally involve primarily the lower extremities. Traumatic amputation is common. Most casualties are hospitalized. Lower nephron nephrosis is common, and the mortality rate for extremity wounds is significant.

A constant hazard facing the advance of a patrol is that of enemy ambush. The wounding agent is usually a light machine gun, which almost always is hidden, or concentrated automatic rifle fire. This may be followed by hand grenades if the enemy inhabits controlling terrain. The killed-in-action rate may be high in such a situation, with perforating chest and abdominal wounds from machine gun fire and head wounds from automatic rifle fire, although the enemy has not demonstrated notable marksmanship. Grenades, if used, may be concussion type if prisoners are sought or fragmentation type for mass wounding effect. Occasionally, a patrol may be lured into an area previously "zeroed" by enemy mortars and suffer numerous casualties from concentration fire; however, the mortality rate is usually low. Extremity wounds are most frequent and are usually of a penetrating type. This also applies to the wounds of other anatomic regions.

Perimeter Defense.—Early in the Korean conflict many friendly units of various size found themselves detached from their organizational security because of enemy infiltration tactics. Problems of terrain and too few friendly troops favored the enemy tactics. In such an instance the enemy simply sacrificed personnel in order to bring about logistic and physical exhaustion of United Nations' troops. Casualties resulted mainly from close-in fighting, the enemy using "burp guns" and grenades.

Assault.—Assault by United Nations' troops: Most objectives in Korea are fortified mountainous positions. Battles usually open with air bombardment, strafing, and napalm (jellied gasoline), followed by heavy artillery fire. As this softening fire lifts, the infantry moves in and up, utilizing darkness, defilade, cover, and supporting fire from mortars and machine guns. Riflemen carrying grenades move into range and try to force the enemy out of bunkers and other protected positions. The first casualties usually are from mortar fire as the infantrymen make their approach to the forward slope of the objective. At times this casualty incidence may be high, particularly if the terrain is open and the 120 mm. mortars have "zeroed" the area. There is a zone of relatively low casualty incidence as the troops reach the base of the slope and gain protection from mortar fire. Frequently, there is a lull during which regrouping is done. Mortar support and air coverage attempt to neutralize enemy machine guns and keep the enemy pinned down. This is the most hazardous period for wounding by our own weapons—a short round of artillery, a bomb off target, or a strafing run too close. Machine gun fire is encountered next. Sometimes this fire is used 300 to 500 yards distant; at other times it is withheld to 50 yards or less. The casualty rate is not high from this fire but a large proportion represents killed in action, and many of the wounds are to the chest and abdomen. As the ridgeline is reached, automatic rifle fire and large numbers of grenades are encountered. Occasionally, a machine gun will be withheld until the last stand. The density of casualties is greatest as the critical terrain is taken and most of them at this time are "burp gun" and grenade casualties. Occasionally, a mine field will protect the area just before the summit is reached, and a series of mutilating wounds will result. If the enemy exhibits real holding strength, this is the most costly tactical operation in casualty rate and also has the highest ratio of killed in action.

Assault by Chinese and Korean troops [2]: There are perhaps some differences in tactics employed by the Chinese and North Koreans, but in principle their attack procedure is almost the same. Usually the easiest terrain route is followed. Large numbers of personnel are utilized with the object of exhausting friendly logistic support. There has been practically no air bombardment and, until recently, little heavy artillery. Mortars have been used extensively and well. The first casualties resulted from such fire and occurred among machine gun crews that had to reveal their position by defensive fire. Counterfire by enemy mortars has been relatively effective. Infiltration by enemy forward observers is common and clever. At times casualties among supporting mortar crews have been significant and the loss of their fire support critical. The enemy attempts to approach in a surprise movement to a point at which heavy artillery fire is denied. There is then a slow but consistent advance of troops saturating a likely terrain avenue by taking advantage of all cover, defilade, and darkness. Riflemen and grenadiers move up the hill covered by machine gun and mortar fire. Casualty incidence is low among United Nations' troops at this stage and amazingly high among the enemy, yet they continue to advance, halting when they must, but exerting constant pressure and stealth. The close-in fighting really begins as automatic riflemen get within 50 to 100 yards. Grenadiers creep forward under this fire and begin to throw their grenades at a distance of less than 25 yards. It is at this stage that United Nations' casualties have

2. It must be specified that the enemy tactics discussed are those used prior to the build-up in heavy artillery and air power during truce negotiations.

their greatest density. Although United Nations' troops are protected by dug-in positions and even advance fields of land mines, the enemy will sacrifice personnel in order to neutralize such advantage and by continued pressure attain the objective. If United Nations' troops do not repulse the attack, they may have to withdraw because of exhaustion of ammunition and personnel.

The relationship of casualty incidence to combat tactics such as limited offensive and defense, or holding action, is easily visualized by regarding such actions as phases of assault first by United Nations' troops and then by enemy troops. Casualty incidence during a withdrawal is dependent on the terrain advantage of the enemy and his freedom of movement. The tragedy of a withdrawal and envelopment was suffered by the Second Infantry Division at Kunuri Pass. Because the enemy held controlling flank terrain within automatic weapons range, the great toll of wounded was primarily the result of machine gun and rifle fire; consequently, the ratio of men killed in action was disproportionately high. This incident was unusual.

THE WOUNDING AGENT

As indicated above, a knowledge of the type of combat engaged in at the time of wounding will give a strong clue as to what possibilities among the various weapons must be considered. Contrary to what many believe, without supporting data, most casualties have a fairly good idea of what hit them. Aside from those disoriented or moribund, less than 10% of the wounded fail to state positively and rationally the identity of the wounding weapon.

In the broadest sense, combat weapons are divided into two categories, small arms and artillery. For accurate, detailed wound analysis, it is essential to know which of the two weapon categories supplied the wounding missile. Identification of this agent immediately implies considerable data relative to enemy action and also gives much insight into the actual nature of the wound. There are some features of wounds produced by small arms as contrasted to shell fragments that are distinctive.

Since the fortunes of war are fickle and the present enemy exceptionally eager and aggressive in his effort to capture materiel, quantities of United Nations' arms occasionally fall within his grasp. Identification of such weapons as the causative agent in a given wound incidence is important and desirable, although admittedly more difficult and perhaps more unreliable. In a certain number of instances, however, especially if wounds are produced by small arms bullets, the casualty is able to give positive identification.

The list of weapons causing most wounds is not extensive. At the onset of the present conflict in Korea, the North Korean Army was completely equipped by the Soviet Union. Since it is probable that this will continue to be the case, primary attention should be paid to these weapons, which are, in general, of a reliable nature. They seem crude in workmanship, but this does not appreciably impair their functioning and accuracy.

The small arms include such weapons as the pistol, sub-machine gun, or the "burp gun," the rifle, light and heavy machine guns, and, occasionally, obsolete antitank rifles. Until recently little heavy artillery was furnished to Korean troops by the Soviet Union. The artillery had been of light and medium caliber with much dependence on mortar fire. The principal mortars employed are the 82 mm. and the 120 mm., the latter being more effective. Antitank guns of 45 mm. and 76.2 mm. caliber are used as well as field guns of 76.2 mm. and 122 mm. caliber. The enemy is now reported to have large quantities of heavy artillery, but no significant wounding effect has occurred. The grenades follow the standard models of fragmentation and concussion type similar to those used by United Nations' troops. They are used in abundance, and, although reported to be less powerful than ours, they are capable wounding agents.

Relative Morbidity and Mortality of Wounding Agents.—The mortality and morbidity of war wounds depends on the wounding agent and the anatomic region involved. It has been shown in all conflicts since the Civil War that shell fragments cause the greatest number of wounds and small arms bullets cause the greatest number of deaths. The relative morbidity of small arms fire to shell fragmentation is about one to four. The relative mortality of small arms fire to shell fragmentation is about two to one. Thus far in the Korean war, mortars, particularly the 120 mm., and grenades have accounted for the majority of wounds caused by shell fragments. The light machine gun, the automatic rifle, and the "burp gun," have accounted for the majority of those killed in action by small arms fire.

It is worthy of emphasis that in the present survey small arms fire accounted for about 65% of the killed in action, and shell fragments accounted for the remaining 35%. Among the wounded in action, there is a sharp reversal in incidence of the wounding agent, and shell fragments account for about 75% of the casualties and small arms fire for the remaining 25%. Naturally these figures will vary somewhat with the type of combat tactics, but they are applicable to continued aggressive land warfare. In combat in which patrolling action predominates, casualty incidence due to small arms tends to rise, but even this is partially balanced by an increase in casualties from land mines. The latest casualty survey in Korea conducted by Lieut. Col. W. W. Cox, Major William F. Enos, and Lieut. George Coe, United States Army Medical Corps, indicates a higher incidence of killed in action due to shell fragments and a higher percentage of wounds involving the thorax.

THE WOUND

War wounds are classified as follows: 1. Nonpenetrating wounds include contusions, superficial or deep, usually attributable to blast, concussion, or other physical force transmitted to subcutaneous tissues or viscera without disruption of the skin. 2. Penetrating wound implies disruption of the skin and entrance of the missile, or wounding agent, into the subcutaneous tissue and perhaps, viscera without a wound of exit therefrom. 3. Perforating wound implies disruption of the skin and entrance of the missile, or wounding agent, into and passage through the subcutaneous tissue and underlying structures with a wound of exit. Such wounds are of three

main types, depending on the variable character of the wound of entrance and exit: (*a*) small wounds of entrance and exit, most often "through and through" wounds (tunnel wounds) caused by high velocity small arms fire, (*b*) small wound of entrance and large wound of exit, most often caused by high velocity but small shell fragments or small arms bullets, at close range, and (*c*) large wounds of entrance and large wound of exit, most often caused by large shell fragments or ricochetting bullets. (4) Mutilating wounds produce a marked disfiguring effect or involve actual loss of an anatomic part.

REGIONAL INCIDENCE OF WOUNDS

The regional frequency of wounds is the percentage of a given number of casualties who have been wounded in a particular body region. Regional distribution of wounds is the percentage of the total number of wounds occurring in a particular body region in a given number of casualties (tables 1 and 2).

This survey indicates a wound incidence per casualty of 1.7%. The number of wounds, particularly to the thorax and abdomen, is closely related to the mortality rate, that is, the rate almost doubles if more than one wound occurs. In view of the fact that 75% or more of all wounds are caused by shell fragments, it is remarkable that the wound incidence per casualty is not higher; however, this figure tends to substantiate the observation obtained through casualty interview that the mean distance from the shell explosion is from 8 to 10 m. If the distance were less, wound incidence would undoubtedly be much higher.

Penetrating and Perforating Wounds.—Wounds of this type have been previously defined on the basis of whether or not the wounding missile disrupted the skin and lodged within the underlying tissue or continued in its passage producing a wound of exit. The relative incidence of such wounds among casualties wounded in action is as follows: head, penetrating, 15, perforating, 1; thorax, penetrating, 8, perforating, 1; abdomen, penetrating, 4, perforating, 1; and extremities, penetrating, 3, perforating, 1. Because patients with extremity wounds comprise about two-thirds of those wounded in action, the over-all or corrected ratio of penetrating to perforating wounds is four to one. These figures are mean values for all types of infantry combat and will vary somewhat with any specific engagement.

Although it must not be concluded categorically that a perforating wound is always worse than a penetrating wound, it is logical to presume that in most perforating wounds the missile is of higher velocity. Since ordinarily there is a direct relation between missile velocity and the degree of transient cavitation within the tissues, greater damage usually results. A notable exception to this hypothesis is the relatively slight damage of the occasional "through and through" wound of thorax in contrast to the severe destruction of some penetrating wounds of the abdomen.

BODY ARMOR

The implication for some form of body armor to be worn by field troops is simple and urgent. The hospital mortality rate for wounded in action casualties has reached the amazingly low figure of 2%, a 50% reduction from the mortality rate of World War II. This fact is a tribute to the excellence and progress of medical science, but it also clearly indicates that any further significant reduction in total mortality rate among combat wounded must come from the group that die before hospital admission. As previously shown for World War II and the early phase of aggressive warfare in Korea, the battlefield mortality has been 20 to 25% of all those wounded in action. In the past year of truce negotiations and limited combat activity in Korea this figure has fallen to about 15%. It is from this group, therefore, that the greatest reduction in total mortality must be made.

Reduction of the killed in action rate is the most urgent problem confronting field medicine. The possibilities for accomplishing this are few. They are prevention of wounds, reduction in number and severity of wounds, and faster battlefield recovery of those wounded. Much progress has already been made in the technique of battlefield recovery by means of helicopter evacuation, and this has played a significant part in the reduction of hospital mortality. It is apparent that the remaining possibility for reduction of killed in action rates lies in the exploitation of body armor, or wound prevention.

The concept of body armor in warfare is a matter of history. Although such protective equipment had been almost entirely discarded before the 18th century, there is valid authentication of the use of metal body armor to protect the thorax and abdomen among Civil War troops, and its effectiveness can be substantiated by existing records. Some experimentation with various metals and designs was sponsored by the Germans and Allies

TABLE 1.—*Regional Frequency of Wounds*

Wounded in Action	
Head	16%
Thorax	8%
Abdomen	6%
Upper extremity	26%
Lower extremity	44%
	100%
Killed in Action	
Head	27%
Neck	4%
Thorax	25%
Abdomen	10%
Upper extremity	4%
Lower extremity	5%
Multiple	25%
	100%
Dying of Wounds	
Head	28%
Thorax	6%
Abdomen	15%
Thoraco-abdominal	10%
Extremities	15%
Vertebra and cord	6%
Multiple	20%
	100%

TABLE 2.—*Single and Multiple Wounds*

Wounded in Action	
Single wound in one body region	35%
Single wound in two body regions	44%
Single wound in one body region Multiple wounds in another body region	4%
Multiple wounds in one body region	2%
Multiple wounds in two body regions	14%
Multiple wounds in one body region Single wound in another body region	1%
	100%

in World War I, and, toward the last of World War II, a fairly large number of thoracoabdominal vests were made by the United States forces but never satisfactorily tried on the field of battle.

The Air Force has already had considerable experience with body armor and standardized its use among aircraft personnel in World War II. An official estimate shows a probable 55% effectiveness in casualty reduction. Weight of the protective item is, of course, not as significant a factor among airborne personnel as among field forces.

In modern warfare top priority has been given to speed in maneuver, and a vigorous campaign has been waged to reduce the weight of equipment carried by the infantryman. At the same time, there has been a tremendous increase in fire power from modern weapons, or, in other words, greatly augmented density of wounding agents. Since most casualties result from shell fragments, that is, random fire rather than aimed fire, the chance factor for wounding bears a direct relationship to the density of the missiles.

Wound ballistics studies, experimental and field research, under combat conditions directed by the Surgeon General, Department of the Army, have established the anatomic regional frequency and distribution of wounds, the relative incidence of wounding agents, the circumstances of wounding, and a classification of the type of wounds produced. It is on the basis of such studies that the feasibility of body armor has been proposed.

The helmet has long been accepted as essential to the battle dress, yet wounds to the thorax account for almost as many killed in action as do wounds to the head. Thoracic and abdominal wounds combined are known to account for about one-third of those killed in action, and the most recent survey indicates an even higher percentage. Of those wounded in action, about 15% were wounded in either the thorax or abdomen and of those dying of wounds after reaching a hospital, about 30%.

It has been previously shown that under current battle conditions shell fragments cause about 75% of all wounds and about 35% of the deaths of those killed in action. Later studies indicate that the second figure may be as high as 50%. That 75% of all wounds are of a penetrating type with the missile lodging within the tissues implies a velocity ordinarily less than that of a missile producing a perforating wound. The average distance from the shell explosion to the casualties caused by fragments has been determined to be from 8 to 10 m., and the wound incidence per casualty of 1.7% suggests that this distance is reasonably accurate.

From these observations the need for body armor is apparent. The problem of providing such protection requires a coordinated effort by many branches of the military service, because the design of the body armor must be a compromise between the ideal in protection and the practical in use. The maneuverability and effectiveness of the combat man must be preserved.

In June, 1951, a joint Army-Navy mission was dispatched to Korea to conduct the first controlled field trial of body armor under combat conditions. The body armor, a thoracoabdominal vest weighing about 8 lb. (3.6 kg.) and with protective qualities superior to those of the helmet in current use, was to be worn by combat medical personnel and other members of all the services.

The field trial lasted for about two months, and troops of the First Marine Division and the Second Infantry Division were carefully indoctrinated in the use and value of the thoracoabdominal vest. On conclusion of the trial, it was reported that the vest was desirable, acceptable, and could be worn without undue encumbrance or hindrance to job performance. The psychological effect was also favorable. Based on these findings, more extensive trials have been initiated and are continuing. The design has undergone modification, but the same materials, compressed fiberglass and nylon, are being utilized. Results of the present trials by the Marines and the Army are restricted data, but it can be said that thus far indications are encouraging.

SUMMARY

Progress in combat medicine and surgery has been so rapid that the mortality rate among casualties wounded in action has reached the impressive incidence of 23 per 1,000 in Korea as compared with 45 per 1,000 in World War II. Although this is gratifying and laudable, the progress in medical care must soon reach a point of optimum and ultimate efficiency. In order to reduce the mortality rate further, attention must be given to the possibilities of wound prevention, reduction in wound severity, and means of faster battlefield salvage. The helicopter undoubtedly has already done much to accelerate evacuation of casualties, and this has contributed significantly to the present reduced mortality rate. The remaining possibility for further reduction lies in the use of body armor for combat personnel. Much progress has already been made in its design, production, and use in Korea under combat conditions. Although it is too early for final evaluation of its effectiveness, the Marines have recently standardized body armor as an official item of equipment, and both Army and Marines have extensive trials in progress in Korea and in experimental laboratories. It appears that body armor will provide another means of preventive medicine for the armed forces and will contribute to the total medical effort to conserve the fighting strength.

Hormones and Carcinoma of the Breast.—Surgery and irradiation are the optimum modalities for operable breast carcinoma. Androgens and estrogens after extensive clinical trial have so influenced mammary carcinoma that they may now be added to irradiation and castration as palliative agents in the treatment of the advanced case.

Estrogens are indicated in patients ten years or more postmenopausal. Androgens should be tried in all other physiologic age groups, or in the older women who do not respond to estrogens. The physiologic age rather than the site of involvement should determine the proper steroid hormone, since both osseus and soft tissue metastases were influenced by both groups of compounds. These agents maintain only temporary disease control, so that cessation of primary steroid therapy and then substitution of an antagonistic steroid can be effective.

Symptomatic improvement is greater than objective improvement. A return of symptoms often antedates evidence of objective progression.—George C. Escher, M.D., Hormone Therapy in Advanced Mammary Carcinoma, *The Medical Clinics of North America*, May, 1952.

TREATMENT OF ALCOHOLISM WITH ANTABUSE®

Robert C. Larimer, M.D., Montreal

Tetraethylthiuram dilsulfide (antabuse®), which produces a pronounced intolerance to alcohol, has been available in North America for investigative and therapeutic use since January, 1949. The purpose of this paper is to augment the observations previously reported [1] from this clinic and to present the findings in 193 alcoholic patients followed up for two and one-half years.

Tetraethylthiuram disulfide and similar chemicals have been used for many years in the vulcanization of rubber. It has long been known that in workers in the tire industry severe reactions frequently developed after drinking alcohol.[2] Little attention was paid to this observation until 1948, when a group of Danish investigators in search of a vermifuge tried tetraethylthiuram disulfide, among many other substances. Though it was ineffective in this regard, during the course of self-experimentation these researchers noted the peculiar properties of this chemical with respect to the ingestion of alcohol and with unusual serendipity began clinical and pharmacologic studies leading to its use in the control of symptomatic alcoholism.[3]

Little is known about the pharmacologic action of tetraethylthiuram disulfide. It is absorbed in the intestine and excreted, probably through the biliary tract, into the feces at the rate of approximately 0.5 gm. daily.[3a] It interferes with the enzymatic oxidation of alcohol,[4] with the result that in subjects pretreated with the compound the ingestion of alcohol leads to the remarkable rise in serum acetaldehyde that is apparently responsible for the clinical phenomena seen during the tetraethylthiuram disulfide-alcohol reaction.[5] Current work suggests that the enzyme inhibited is xanthine oxidase.[6] Besides being involved in the oxidation of acetaldehyde to acetate, this enzyme is responsible for the breakdown of purines to uric acid, and tetraethylthiuram disulfide regularly leads to a definite lowering in the serum uric acid.[7] Whether this drug would therefore be useful in the treatment of gout is to be the subject of further investigation.

PROCEDURE

The procedure followed in the Antabuse Clinic of the Allan Memorial Institute is essentially that described by Gelbman and Epstein in their initial paper [1a] from this clinic. The clinic is held once weekly, although patients are frequently seen at irregular times as well. The personnel consists of one or occasionally two resident psychiatrists, with one nurse in attendance during the "experience session." All patients are outpatients, except those coming from a distance, who are hospitalized as a matter of convenience. Patients are not seen unless they have been without alcohol for at least 48 hours.

At their first clinic visit the patients complete a casual history, the Cornell Medical Index, and the Phipps-Alcadd questionnaire. This saves time and provides a reasonably complete and objective record of the patient at this first visit. Blood is drawn for cell counts and for nonprotein nitrogen, bilirubin, and sugar determinations; urine is obtained for routine analysis; and a physical examination is performed. The actions of tetraethylthiuram disulfide are then outlined, the philosophy of its use is presented, and the patients are encouraged to discuss in a group [8] (there are usually several patients) their motivation for tetraethylthiuram disulfide treatment. If they then decide to accept treatment, they are given a supply of tablets to take during the next week.

One week after the first clinic visit, the patients return with a supply of their favorite alcoholic beverage (2 qt. of beer or 10 or 12 oz. of distilled liquor) for an observed reaction. This "experience session" is held in the hospital, with a nurse in constant attendance. Supplies of the usual emergency drugs are on hand, as well as ascorbic acid and saccharated iron, either of which will, when injected intravenously, abort the reaction almost immediately at any stage.[9] The therapist is in intermittent attendance to point out various phases of the reaction to the patients, thus increasing their awareness of their symptoms, as well as to reassure them that they are actually going to live through the experience.

After the experience session, patients are encouraged to return to the clinic every two weeks for a month or six weeks, and then once monthly. During these brief follow-up periods, the dosage of tetraethylthiuram disulfide is regulated according to the severity of the experience reaction, side-reactions if present are controlled, and an attempt is made to encourage the patient in his new pattern of sobriety. Studies of blood and urine are repeated at yearly intervals. A strong attempt is made to get all patients to join Alcoholics Anonymous, if they have not already done so; and for the few patients for whom it seems necessary, arrangements are made for individual psychotherapy. Insulin therapy to control basic underlying anxiety and electroconvulsive therapy to curb depression are available for use when indicated.

The tetraethylthiuram disulfide (antabuse®) used in this study was furnished by Ayerst, McKenna & Harrison, Ltd., Montreal.

From the Allan Memorial Institute, Royal Victoria Hospital, Montreal, Canada; now at the Department of Internal Medicine, University Hospitals, Iowa City.

1. (*a*) Gelbman, F., and Epstein, N. B.: Initial Clinical Experience with Antabuse, Canad. M. A. J. **60**: 549 (June) 1949. (*b*) Epstein, N. B., and Guild, J.: Further Clinical Experience with Tetraethylthiuram Disulfide in Treatment of Alcoholism, Quart. J. Stud. Alcohol **12**:366 (Sept.) 1951.

2. Johnson, H. G.: Antabuse® for Alcoholism, correspondence, J. A. M. A. **140**: 426 (May 28) 1949.

3. (*a*) Hald, J.; Jacobsen, E., and Larsen, V.: The Sensitizing Effect of Tetraethylthiuramdisulfide (Antabuse®) to Ethyl Alcohol, Acta pharmacol. et toxicol. **4**: 285, 1948; abstracted, J. A. M. A. **139**: 1233 (April 23) 1949. (*b*) Martensen-Larsen, O.: The Treatment of Alcoholism with a Sensitizing Drug, Lancet **2**: 1004 (Dec. 25) 1948.

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6. Richert, D. A.; Vanderlinde, R. E., and Westerfeld, W. W.: The Composition of Rat Liver Xanthine Oxidase and Its Inhibition by Antabuse, J. Biol. Chem. **186**: 261 (Sept.) 1950.

7. Saffran, M., and Webb, D.: Unpublished data.

8. Crahan, M.: Treatment of Alcoholism with Tetraethylthiuramdisulfide: Observations on Effects of Group Reaction Tests and of Test Witnessing, Quart. J. Stud. Alcohol **11**: 538 (Dec.) 1950.

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SELECTION OF CASES

Needless to say, the prospective patient should be an alcoholic. The working concept in this clinic is that anyone who feels the need to drink, who routinely gets into trouble when he drinks, or (most definitely) who cannot stop drinking once he has started, is an alcholic. This phenomenological classification puts alcoholism into the category of "sign" rather than "disease," and it includes as "alcoholics" persons with a wide variety of basic psychiatric disorders ranging from psychopathic personality to schizophrenia, from neurosis to manic-depressive phychosis. With tetraethylthiuram disulfide we are not trying to alter the basic disease but merely to control a particularly disabling sign. Persons who drink heavily and who do not fulfill the above criteria for alcoholism come to the clinic on occasion; however, they are not given tetraethylthiuram disulfide, since it is felt that this form of treatment is both unnecessary and harmful in such cases. Perhaps the primary contraindication to the acceptance of patients for treatment is the almost complete lack of self-motivation as evidenced in a man who says, "My wife wants me to stop drinking," or "My boss says I have to take Antabuse as long as I work there."

There are also a number of medical contraindications, some of which seem to be more apparent than real. Among the diseases reported in the literature in which tetraethylthiuram disulfide should be given cautiously are diabetes and cardiovascular, liver, and central nervous system disease.

Diabetes: In the original communication concerning this study [3b] it is stated that tetraethylthiuram disulfide may be given to patients who have properly controlled diabetes, but that the drug is dangerous in the absence of careful control.[10] One of our patients had mild diabetes that was undiagnosed until a diabetic coma developed after 10 days of treatment. Over a year later, while he was under excellent dietary control, his glucose tolerance was markedly decreased by small doses of the drug. Another patient whose diabetes was well controlled by insulin remained well for over 10 months until he stopped taking the drug and started drinking, when acidosis promptly developed.

Cardiovascular Disease: During the tetraethylthiuram disulfide-alcohol reaction there is characteristically a fall in blood pressure, often to shock levels, and it is generally agreed that patients with cardiovascular disease of any severity, particularly those with arteriosclerosis or evidences of old myocardial or cerebral infarcts, should not undergo a reaction of this kind.[11] It has been the practice in this clinic,[1a] in cases in which the patients are reasonably intelligent and well motivated, to give them tetraethylthiuram disulfide and to permit them to watch several others undergo the reaction and then to caution them about the increased hazards in this situation. Electrocardiographic changes have been reported in 90% of all patients taking the drug in one series.[11] We have also observed changes in three patients without clinical evidence of heart disease, but have not discontinued the drug, and the patients have experienced no difficulty. A cerebrovascular accident developed in one patient three days after he started treatment, probably coincidentally; and one suffered a myocardial infarction not associated with the intake of alcohol, 11 months after beginning therapy.

Liver Disease: Despite the correlation between alcoholism and Laennec's cirrhosis, and the finding in one clinic that nearly 90% of alcoholic patients have alterations in at least one "liver function" chemical test,[12] no patient in our series had either a history suggesting liver disease or laboratory tests indicating it. On theoretical grounds one would hesitate to give tetraethylthiuram disulfide to a patient with well-marked cirrhosis, but we have encountered no difficulty in hepatic dysfunction. Although it has not been noted in the literature as a troublesome complication, three of our patients with gallbladder disease have had severe exacerbation of their pain while taking the drug. One of these patients continued to take medication for four months before being forced to have a cholecystectomy. Since the operation, he has had no difficulty.

Central Nervous System Disease: We have had no patient with an abnormal electroencephalogram or a history of epilepsy before treatment; however, electroencephalographic abnormalities developed in two patients while they were taking tetraethylthiuram disulfide. One had a generalized dysrhythmia associated with myoclonic twitching during the experience session, and the other a diffuse "toxic" pattern associated with a toxic psychosis (see below). It would seem that epilepsy might be a contraindication to this form of treatment, although cautious trial might be made. We have had one patient with pronounced choreoathetosis, probably on the basis of birth injury, who showed no change either clinically or electroencephalographically while in treatment.

RESULTS

During the 27 months covered by this report tetraethylthiuram disulfide was given to 193 patients. At the end of this time the status of only 118 of these was known, the others having broken contact. Of those, 50 (42.3%) were still taking the drug, some for the entire period. Although most remained completely abstinent from alcohol for this period, several patients stopped taking tablets and permitted themselves to drink during holidays. An additional 25 (21.2%) stopped treatment after periods ranging from one week to 17 months (mean, 8.0 months) and either stayed completely abstinent or had one or two minor relapses over periods of from 1 to 19 months (mean, 10.6 months). Twenty-five stopped taking their tablets and reverted to their old drinking patterns after a medication period of from 1 to

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11. Raby, K., and Lauritzen, E.: Circulatory Changes During Antabuse-Alcohol Reaction: Preliminary Report, Nord. med. **42**: 1693 (Oct. 28) 1949; abstracted, J. A. M. A. **142**: 1028 (April 1) 1950. Norman, V. P., and Drusinsky, F.: Antabuse: Contraindication to Its Use, South African M. J. **24**: 152 (March 4) 1950; abstracted, J. A. M. A. **143**: 1120 (July 22) 1950. Macklin, E. A.; Sokolow, M.; Simon, A., and Schottstaedt, W.: Cardiovascular Complications of Tetraethylthiuramdisulfide (Antabuse®) Treatment of Alcoholism, J. A. M. A. **146**: 1377 (Aug. 11) 1951.

12. Voegtlin, W. L.; Broz, W. R., and Moss, M. H.: Liver Function in Chronic Alcoholic Patients: Incidence of Liver Disease as Indicated by Laboratory Methods and Suggested Screening Procedures, Gastroenterology **12**: 184 (Feb.) 1949; Voegtlin, W. L.; Broz, W. R.; Tupper, W. E., and Robinson, M. M.: Liver Function in Chronic Alcoholic Patients: Correlation Between Elements of the History and Presence of Liver Dysfunction as Indicated by Laboratory Tests, ibid. **13**: 391 (Nov.) 1949; Voegtlin, W. L.; Tupper, W. E., and Robinson, M. W.: Liver Function in Chronic Alcoholic Patients: Correlation Between the Presence of Liver Dysfunction as Indicated by Laboratory Tests and Objective Findings on Examination, ibid. **14**: 485 (April) 1950.

11 months (mean, 3.8 months). Of 18 who stopped and then started taking tablets again, 14 are still taking them and 4 have stopped treatment and are drinking again.

Thus, 89 (76%) may be considered to have improved, even though at the end of the 27 months some of them were not taking tetraethylthiuram disulfide and some had a few minor relapses, while 29 (24%) showed no improvement. These figures, however, are too small and the follow-up period too short to indicate any sort of a trend, but it is instructive to compare them with rates of cure or improvement from other forms of treatment. Conditioned reflex therapy [13] is reported to give an over-all figure of 49% of patients symptomatically cured over a 10 year period. Over a two year period, corresponding to the time in which we used the drug treatment, the recovery rate from conditioning against alcohol is 60%. It is stated that Alcoholics Anonymous claim about a 60% recovery rate, but the basis for this figure is unknown. No figures have yet been published pertaining to alcoholics treated solely by individual or group psychotherapy, or by hormone therapy. By comparison then, the recovery rate with tetraethylthiuram disulfide is definitely encouraging.[14]

COMMENT

In many centers [15] tetraethylthiuram disulfide is not given unless patients can be hospitalized for a considerable period of time. In this clinic it is felt that it is far better for the eventual rehabilitation of the patient to keep him in his usual environment during the entire period of treatment. Diagnostic tests can be done as easily on outpatients as on hospitalized patients, and the considerable risks involved during the experience session are minimized by having the patients come into the hospital for the few hours necessary. During the experience session the patients have the unenviable opportunity of learning the result of drinking after pretreatment with tetraethylthiuram disulfide. This is valuable on three counts: 1. It enables us to study varying reactions of different patients. 2. It helps determine the maintenance dose of the drug (roughly inversely proportional to the severity and rapidity of the reaction). 3. It acts as a conditioning stimulus to a number of patients who state later that "even the smell of beer" makes them sick.

The tetraethylthiuram disulfide-alcohol reaction itself follows a definite pattern,[16] although of course there are variations depending on the type of beverage, rapidity of drinking, degree of apprehension, and so forth. Soon after beginning the treatment, patients may have to take as much as 2 to 4 oz. (60 to 120 cc.) of "hard liquor" or a glass of beer before the reaction begins; later, one fermented grape will bring on a reaction. The patients may drink at whatever rate they wish. Usually within 5 to 10 minutes they notice a flush and a warm sensation that, starting on the face, spreads over the trunk and extremities in the course of 15 to 20 minutes. This is accompanied by a pronounced drop in blood pressure, tachycardia, palpitation, and dyspnea. The patients become somnolent, occasionally complain of a violent headache, and may vomit at this time. They then fall asleep, and may show myoclonic twitching, which is perhaps due to the respiratory alkalosis following hyperventilation. As they sleep they become pale and cold, and their blood pressure rises toward normal. After an hour or so they awaken and begin to vomit in earnest. The entire reaction usually lasts four to six hours. Afterward the patients return to their lodgings, where they usually sleep for a further period, then awaken with a surprisingly good appetite.

During the reaction some patients have symptoms of an alarming nature, simulating catastrophic organic disease. We have yet to find any residuum, however, and although these symptoms may be frightening both to patient and therapist, it is felt that it is wiser to let the reaction go on to its normal conclusion than to abort it with intravenously administered ascorbic acid or iron. The current Danish procedure is to allow only a slight flush to develop in the patient with a small amount of alcohol, and the dose of both tetraethylthiuram disulfide and alcohol is regulated accordingly. It may be mentioned that inasmuch as 8,000 patients have been treated with this drug in Denmark, the reaction is so well known among alcoholics that only the suggestion of a reaction is needed.[17] This is not generally the case in North America, however. In a number of other European and some American centers, patients are subjected to repeated, full-blown reactions, ostensibly to regulate the dose of tetraethylthiuram disulfide but actually to produce a conditioned response. In our own clinical procedure, unless the reaction is quite unsatisfactory (about 5% of the time) or the patient wonders whether he will still have a reaction to drinking after taking tetraethylthiuram disulfide for a year or two, we do not have our patients repeat their experience session. We find, too, that having patients go through the experience session in groups of three or four rather enhances the effect. It is easier for them to relate to each other during the unpleasant reaction, thus rendering their later contacts with one another and with members of Alcoholics Anonymous less difficult; and by talking about their symptoms they increase their awareness of them. There is also a certain contagiousness about vomiting.

Soon after beginning to take tetraethylthiuram disulfide, many patients complain of symptoms that they attribute to it. The most frequent, and indeed almost invariable, complaint is drowsiness, often slight and transient but frequently of a disturbing or incapacitating degree. This usually passes off within a month. In any event, it is easily controlled by amphetamine or methamphetamine (desoxyephedrine) hydrochloride. Since many patients suffer from insomnia during the early period of withdrawal from alcohol, this drowsiness is desirable, and they are encouraged to use tetraethyl-

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14. Forssman, H.: cited in Antabuse® in Chronic Alcoholism, Foreign Letters (Sweden), J. A. M. A. **145**: 1214 (April 14) 1951.

15. Treatment of Alcoholism with Tetraethylthiuramdisulfide, editorial, J. A. M. A. **142**: 420 (Feb. 11) 1950. Glud, E.: Treatment of Alcoholic Patients in Denmark with "Antabuse": With Suggestions for Its Trial in the United States, Quart. J. Stud. Alcohol **10**: 185 (Sept.) 1949. Bennett, A. E.; McKeever, L. G., and Turk, R. E.: Experiences with Antabuse Treatment of Alcoholism in a General Hospital, J. Nerv. & Ment. Dis. **112**: 393 (Nov.) 1950. Marti-Granell, A., and Pedrosa, J. M.: Antabuse in the Treatment of Chronic Alcoholism, Med. clín., Barcelona **8**: 122 (Aug. 3) 1950; abstracted, J. A. M. A. **144**: 1312 (Dec. 9) 1950. Jacobsen, E., and Martensen-Larsen, O.: Treatment of Alcoholism with Tetraethylthiuram Disulfide (Antabuse®), J. A. M. A. **139**: 918 (April 2) 1949.

16. Gelbman,[1a] Bell, R. G., and Smith, H. W.: Preliminary Report on Clinical Trials of Antabuse, Canad. M. A. J. **60**: 286 (March) 1949.

17. Jacobsen, E.: Personal communication to the author.

thiuram disulfide as a sleeping tablet for the first month. Several skin rashes were seen within the first six months of the investigation; however, none has been seen since, and those reported from this clinic [18a] and elsewhere [18] were easily controlled with tripelennamine (pyribenzamine®) hydrochloride. Such conditions as anorexia, globus, constipation, diarrhea, abdominal cramps, headache, tachycardia, impotence, and joint pains are sometimes encountered, though usually the simple explanation that these symptoms are caused solely by anxiety over the abstinence from alcohol enables the patient to dispose of them. Occasionally simple nonalcoholic tonics, vitamin tablets, or other placebos are prescribed when necessary. Some patients have complained of an after-taste to the tablets. (One of our patients, a chemist, was able to identify this as an aldehyde, not a sulfide, taste.) As all such "tastes" were reported after the experience session, never before, we feel that this is a conditioned response rather than an actual taste. The "taste" usually disappears if the tablets are taken with meals. One striking feature about all of these side-reactions is their relation to previous sites of injury, either physical or psychic. Old foci of injury or disease seem once again to be noticed, but new ones are apparently not produced. Thus we feel that, with the possible exception of the somnolence, all symptoms are really caused by anxiety rather than by any true pharmacologic action of tetraethylthiuram disulfide. Two patients did discontinue taking the drug, however, on the advice of other physicians for complaints referable to the cardiovascular system, whose nature has remained unproved.

In six patients acute psychotic reactions with strongly schizoid coloring developed,[19] necessitating the discontinuance of tetraethylthiuram disulfide. In addition one mild psychotic reaction was encountered but soon passed off while the patient was still taking the tablets. If one can judge from the pretreatment questionnaires, all these patients were prepsychotic before they took tetraethylthiuram disulfide, and it is thought that they were able to maintain their relationship only to a world "softened" by alcohol. Soon after the acute schizophrenic phase was ended, two of the patients released from the hospital began drinking as before, and they have since been able to get along in society with only a moderate amount of difficulty. Whether these reactions are true toxic psychoses, examples of the Ganser syndrome, or acute schizophrenic reactions, is open to question. At least one patient could be made either psychotic or well within a day or two by giving him either tetraethylthiuram disulfide or placebo tablets; and even when the drug was disguised in aluminum hydroxide gel (amphojel®), he became psychotic again and had toxic electroencephalographic changes. Other patients have remained psychotic for brief periods (a month or less) after treatment was discontinued, but the relation of medication to psychosis was never fully elucidated.

A considerable amount of anxiety is evoked in patients taking tetraethylthiuram disulfide. In the first place, anxiety is present in anyone addicted to anything when he is deprived of it. This is especially true in the case of alcoholics because of the widespread use of alcohol and the frequent contact most of these persons have with others who drink. In the second place, since it is only through their own efforts that these patients maintain sobriety, any time they really want a drink they can take one. If other persons keep them sober, they can use their ingenuity to sneak drinks. They know, however, that if they are taking tetraethylthiuram disulfide, they absolutely cannot drink until the drug has all been excreted, which takes at least three or four days and often three or four weeks. In patients whose motivation is poor, this chemical prison is intolerable. On the other hand, if patients adopt the attitude that tetraethylthiuram disulfide is like insurance (if they "pay their premiums regularly," i. e., take their tablet daily, they are "protected" from drinking), if they remember their alcoholic life well enough and are well motivated toward abandoning it, they have little anxiety. The amount of psychotherapy that can be provided in this setting is, of course, meager, but many of the patients actually need very little individual psychiatric treatment.

During the entire period of treatment the fundamental independence of the patient is stressed. As mentioned, patients are not accepted for treatment unless they actually want it. No attempt is made to "sell" tetraethylthiuram disulfide to alcoholics who are brought in by their employers, friends, or families, and who have the slightest doubt that they need this form of treatment. Likewise, contrary to the policy in the other centers, our patients are encouraged to take their own tablets rather than to accept them from wives or mothers; thus the alcoholic's self-respect is fostered, and resentment toward over-protective family members is minimized.

Regarding those patients who have relapsed, one can mention several factors that come into play.[20] Primarily alcoholism is not a disease but rather a sign common to a great variety of psychiatric diseases, and the prognosis of the alcoholism itself is basically related to the prognosis of the underlying disease. A patient with a psychopathic personality or a character neurosis, by and large simply will not take tetraethylthiuram disulfide for very long, especially if he is addicted to barbiturates or opiates as well as to alcohol. The patient with schizophrenia or a schizoid personality apparently sometimes needs alcoholic dilution of the empirical world in order to be able to cope with it; when kept abstinent and face-to-face with sober reality, he breaks down into schizophrenic withdrawal.[19] Occasionally, depressed patients will drink while still taking treatment, since the reaction is so gratifyingly punitive. A manic or hypomanic patient simply ignores the reaction. By far the largest number of patients who stop taking the drug, however, are those who, because of their neurotic difficulties, find it difficult to relate to others. This drug is no substitute for psychotherapy.

Patients are told that although there are many excuses for stopping treatment, there is only one reason, and that is to start drinking again. The excuses seem to fall into two general categories. The first has to do with the severity of the side-effects. The anxiety of sobriety and

18. Lewis, H. M., and Bremers, H. H.: Fixed Drug Eruption from Tetraethylthiuram Disulfide (Antabuse®), J. A. M. A. **142**: 1141 (April 15) 1950.

19. Guild, J., and Epstein, N. B.: Psychosis During the Treatment of Alcoholism with Tetraethylthiuram Disulfide, Quart. J. Stud. Alcohol **12**: 360 (Sept.) 1951.

20. Dale, P. W., and Ebaugh, F. G.: Personality Structure in Relation to Tetraethylthiuramdisulfide (Antabuse®) Therapy of Alcoholism, J. A. M. A. **146**: 314 (May 26) 1951.

the consequent conversion symptoms are simply too great for some persons to stand without strong psychological support. They quietly stop taking their tablets, the symptoms disappear, and some of them start drinking again, usually within one month. The second group of excuses has to do with overconfidence. After two to four months of taking tetraethylthiuram disulfide, many patients feel that they are actually cured of their alcoholism. Our data would suggest that a period of two to four months is not long enough for the average alcoholic to establish a pattern of sobriety. Sooner or later, usually within the first month of discontinuing therapy with the drug, these patients take the fateful first drink. Most patients give up after the initial failure and do not take tetraethylthiuram disulfide again, and they ascribe their failure to the drug rather than to themselves for not taking it. An energetic follow-up program is necessary to convince patients that someone is really interested in them and to remind them that three months of abstinence do not mean a lifetime of sobriety, as well as to provide medical and psychiatric care during the rehabilitation period.

CONCLUSIONS

What, then, may we expect from this form of control of alcoholism? In the first place, during a short period under close observation all patients will remain sober. This is an obvious advantage in considering the progress of psychotherapy, the behavioral control of the hospitalized alcoholic, and the management of certain stress periods in the life of an alcoholic.

In the second place, a substantial number of patients can be kept abstinent for a long period of time by the use of tetraethylthiuram disulfide alone, or combined with extremely simple psychotherapy. Most patients in our group see the therapist for not more than 15 minutes a month; there are a few who never see him, but pick up their tablets from the receptionist's desk; and there are quite a number who buy their tablets at the pharmacy and keep taking them for many months with no contact with the clinic whatsoever.

In the third place, a surprising number of patients have been able to establish a pattern of sobriety with the help of tetraethylthiuram disulfide, and then to remain sober for a long time without it, either by themselves or with the help of Alcoholics Anonymous. It is impossible to predict when this will happen, at least on the basis of our present data, although it would seem that those patients who are reasonably stable and who take the tablets for eight months or longer stand a reasonable chance of success.

In the fourth place, even with frequent and insistent follow-up a number of patients cannot stand the strain of sobriety and stop taking their pills and start drinking. Many of these patients develop symptoms of one type or another to justify (unconsciously) their relapse into alcoholism.

SUMMARY

Details of the use of tetraethylthiuram disulfide for the treatment of alcoholism on an outpatient basis are presented. Follow-up data on 118 of the 193 patients treated in this clinic over a period of 27 months show that 76% are rehabilitated. This compares favorably with other forms of therapy.

Tetraethylthiuram disulfide must be used cautiously, if at all, in patients with diabetes mellitus, arteriosclerotic cardiovascular disease, hepatic and biliary tract disease, and potential schizophrenia. Prolonged aggressive follow-up is necessary.

SURVEY OF CLOTTING TESTS FOR COAGULATION PROFILE IN NORMAL AND DISEASED PERSONS

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The influence of certain diseases on the clotting mechanism, especially in regard to the predisposition to bleeding and thrombosis, has attracted investigators. Allen and his co-workers [1] have been interested in the bleeding tendency accompanying such conditions as thrombocytopenia and have proposed the protamine titration test to detect an increase in heparin-like substances in the blood. Rosenthal [2] studied the blood of patients with polycythemia and leukemia with a battery of clotting procedures in an attempt to clarify the differences. He then modified the heparin retardation test. In addition, the Waugh-Ruddick test,[3] the heparin tolerance test,[4] the sensitized heparin clotting test,[5] and others [6] have been proposed and used to elucidate the causes or, at least, to anticipate the tendency to bleed or to clot abnormally.

Because of the pitfalls and vagaries of the clotting tests, we have performed a battery of these procedures on the blood specimens of normal persons as well as of patients with far-advanced carcinoma, tuberculosis, leukemia, lymphoma, polycythemia, thrombocytopenia, and aplastic anemia. We were particularly interested in the range of normal values, the effect of extensive tissue breakdown, and the relation of platelet levels to the coagulation values. The routine laboratory approach to the tests was purposefully used in order to check the variability, reliability, and correlative value of the "coagulation profile."

Mr. Marcus Quarles gave technical assistance in this study.

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From the Hematology Laboratory, Coagulation Laboratory, and the Hektoen Institute for Medical Research of the Cook County Hospital.

1. (*a*) Allen, J. G., and others: Protamine Titration as an Indication of Clotting Defect in Certain Hemorrhagic States, J. Lab. & Clin. Med. **34**: 473, 1949. (*b*) Allen, J. G.; Bogardus, G.; Jacobson, L. O., and Spurr, C. L.: Some Observations on Bleeding Tendency in Thrombocytopenic Purpura, Ann. Int. Med. **27**: 382, 1947. (*c*) Allen, J. G., and others: Abnormal Bleeding: Further Clinical Experience with Toluidine Blue and Protamine Sulfate, Surg., Gynec. & Obst. **89**: 692, 1949. (*d*) Allen, J. G., and others: Independence of Protamine Titration and Platelet Level in Certain Hemorrhagic Diseases, Proc. Soc. Exper. Biol. & Med. **70**: 644, 1949.

PROCEDURES

The procedures employed to draw the coagulation profile included the Lee-White, heparin retardation, and protamine heparin titration coagulation tests, prothrombin values; and red blood cell, hemoglobin, and platelet determinations of each patient for correlation. Tests were performed on normal controls in parallel with the study as frequently as was thought necessary. The solutions were freshly prepared, and the glassware was chemically cleaned. As far as practicable, groups of tests were made at the same time, so that comparable results were obtained. This was especially true in the normal, carcinomatous, and tuberculous groups.

Lee-White [7] *Coagulation Time.*—One cubic centimeter of blood is placed in each of two 100 mm. by 13 mm. test tubes. The tubes are examined by gentle tilting at approximately 30-second intervals while in a water bath at 37.5 C. The coagulation time is measured from the time the blood appears in the syringe until the tubes can be completely inverted.

Heparin Retardation Time (Rosenthal [2]*).*—For the preparation of the heparin solution 0.04 cc. of heparin (Abbott), containing approximately 10 mg. per cubic

TABLE 1.—*Results of Clotting Tests in Normal and Diseased Persons*

	Number of Cases	Lee-White Clotting Range	Heparin Retardation Clotting Range	Protamine Heparin Titration Range, Mg.	Prothrombin Determination Range, %	Platelet Count
Normal	50	7-25 min.	17-60+ min. (highest, 90 min.)	0.10-0.14	48-100 ¶	270,000 to 1,500,000
Far-advanced carcinoma	25	7-20 min.	12-60+ min.	0.10-0.12 1 test 0.18 *	37-100	160,000 to 1,750,000
Far-advanced tuberculosis	25	4-20 min.	20-60+ min.	0.10-0.12	16-100	300,000 to 1,440,000
Leukemia	25	3-14 min	14 min.-24+ hr.	0.12-0.20 †	42-100	2,400 to 300,000
Lymphoma	25	3-15 min.	13-60 min.	0.12-0.20 ‡	50-100	6,000 to 800,000
Splenogenic thrombocytopenia	8	7-14 min.	>1 hr.-48 hr. 1 test 24 min.	0.12-0.20 (See table 2)	24-100	(See table 2)
Polycythemia	11	5 min.-24 hr.	15 min.-24 hr.	0.12-0.18	28-100	400,000 to 4,000,000
Aplastic anemia	5	7-10 min.	50 min.-24+ hr.	0.12-0.18 §	75-100	4,000 to 531,000

* In the patient with the high protamine heparin result (0.18), the platelet count was normal, heparin retardation was 29 minutes, and there was no bleeding.
† There were three abnormal protamine heparin results: 0.18, 0.20, and 0.20. None of the patients was bleeding.
‡ The results in two patients were abnormal. In one the initial value was 0.16, but several weeks later it was found to be 0.14. The other was 0.20. Neither showed a bleeding tendency.
§ One value of 0.16 and one of 0.18 were found on original testing. When rechecked subsequently, both values had returned to normal.
¶ Two persons had repeatedly low levels (48 and 50%) without apparent cause.

TABLE 2.—*Results of Clotting Tests in Patients with Splenogenic Thrombocytopenia**

Patient	Dates	Bleeding	Lee-White Clotting Range, Min.	Heparin Retardation Clotting Range	Protamine Heparin Titration Range, Mg.	Prothrombin Determination Range, %	Platelet Count	Remarks
				Patients with Splenectomy				
F. Z.	1950 5/5	G. I.	6	2½ hr.	0.16	100	None	.....
	5/6	.....	5	13 min.	0.14	100	214,000	Post splenectomy
	5/7	.....	4	9 min.	0.14	...	246,330	.....
	5/29	Petechiae	7	15 min.	0.12	...	46,000	.....
	7/7	G. I.	13	90 min.	0.14	...	None	.....
	10/18	None	..	120 min.	0.14	...	76,000	.....
	11/17	G. I.	7	30 min.	0.14	100	16,000	.....
	12/6	.....	..	16 min.	0.10	...	80,000	.....
L. B.	1950 6/7	++	7	3+ hr.	0.18	100	None	Epistaxis, vaginal bleeding, bruising
	6/8	.....	..	26 min.	0.14	...	63,000	Post splenectomy
	6/12	Vaginal	..	13 min.	0.12	...	None	.....
	6/15	Epistaxis	..	15 min.	0.12	...	7,000	Corticotropin given
	8/15	Epistaxis	..	18 min.	0.14	...	50,000	.....
F. S.	1950 9/2	++	8	48+ hr.	0.18	75	6,600	Vaginal bleeding, epistaxis
	9/3	.....	..	12 hr.	0.18	...	140,000	Post splenectomy
	9/4	.....	..	24 hr.	0.16	...	400,000	.....
	9/5	.....	..	17 min.	0.14	...	391,000	.....
	11/3	.....	10	42 min.	0.12	80	693,000	.....
				Patients Without Splenectomy				
S. G.	1950 9/20	Petechiae	5	105 min.	0.16	100	46,000	"Splenogenic"
	9/26	.....	..	3+ hr.	0.16	...	96,000	.....
M. J.	1950 12/5	G. I.	9	4 hr.	0.18	...	None	"Splenogenic"; died
L. E.	1951 3/4	Vaginal	4	24 min.	0.14	...	20,400	"Splenogenic"; died
L. C.	1951 8/20	.....	14	2+ hr.	0.12	...	34,000	"Hypersensitive splenogenic"
	8/22	.....	..	2+ hr.	....	...	.....	.....
L. S.	1950-51 12/2	Epistaxis	8	100 min.	0.20	100	2,000	Lupus erythematosus with purpura
	12/5	.....	..	3+ hr.	0.18	...	.....	Cortisone given
	12/8	.....	..	8+ hr.	Over 0.18	...	11,400	.....
	12/15	.....	7	6+ hr.	Over 0.18	100	110,000	.....
	12/30	.....	..	2½ hr.	0.12	...	319,000	.....
	1/18	.....	8	65 min.	0.16	100	300,000	Off cortisone
	2/14	.....	..	75 min.	0.20	...	60,000	.....

* These are the patients listed under Splenogenic thrombocytopenia in table 1.

2. Rosenthal, R. L.: Blood Coagulation in Leucemia and Polycythemia: Value of the Heparin Clotting Time and Clot Retraction Rate, J. Lab. & Clin. Med. 34: 1321, 1949.

centimeter, is put into 10 cc. of isotonic sodium chloride solution. The following procedure is employed: 0.1 cc of heparin solution is placed in a 100 mm. by 13 mm. test tube that has been marked at the level coincident with the bottom of the meniscus of 1.1 cc. of fluid. Blood is added to reach the mark. The tube is then corked, inverted several times, and placed in a water bath at 37.5 C. Beginning at 12 minutes, the tubes are tilted slightly at intervals of about 2 minutes. The clotting time is the interval between the first appearance of blood in the syringe and the time when the tube can be completely inverted.

Prothrombin Time (Quick [8]).—Sodium oxalate, 0.3 cc. (1.34%), is placed in a tube marked to hold 3 cc. of blood. Three cubic centimeters of blood is added and the tube is inverted two or three times, then centrifuged for 10 minutes at moderate speed to obtain clear plasma. One-tenth cubic centimeter of clear plasma is transferred to a small serologic tube and placed in a water bath at 37.5 C. One-tenth cubic centimeter of thromboplastin preparation, prepared by acetone extraction from human brain, is added first, and then 0.1 cc. of calcium chloride (0.0125 molar) is added quickly. The number of seconds that elapse from the time that the calcium chloride is added until a clot is formed is measured with a stop watch. At least two tests are performed for each specimen.

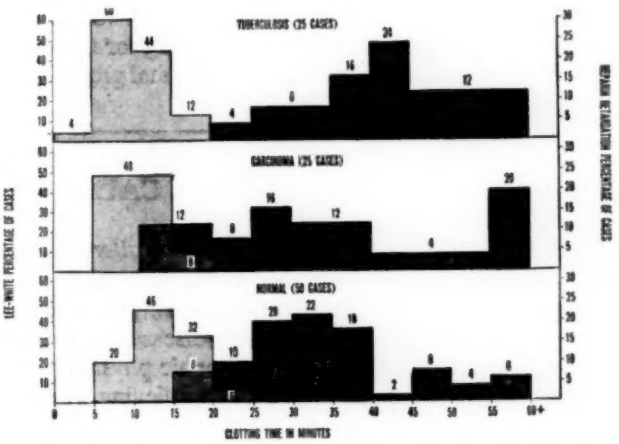
Protamine Heparin Titration (Allen [1a]).—Commercial heparin (Abbott), 0.1 cc. (10 mg. per cubic centimeter) is placed in a graduated centrifuge tube, and blood is added to the 11 cc. level. The tube is corked and inverted several times. A series of five tubes is set up containing the following amounts of protamine sulfate solution (1 mg. of powdered protamine sulfate per cubic centimeter of distilled water): 0.10, 0.12, 0.14, 0.16, and 0.18. One cubic centimeter of heparinized blood is added to each tube. The tubes are shaken about 10 times for mixing and allowed to stand at room temperature for one hour. The first tube that gels or clots represents the end point.

Hematocrit (Wintrobe [9]) and Platelet Count.—To determine the hematocrit, double oxalated blood is centrifuged in Wintrobe tubes at 4,000 rpm for 30 minutes. The platelet count is determined by first spreading a small amount of brilliant cresyl blue (saturated solution) on a cover slip, allowing this to dry, and then buffering it. A small drop of capillary blood is then placed on the cover slip and is pressed down gently on a slide in order to obtain maximal spreading and an even distribution of cells and platelets. Platelets are counted per 1,000 red blood cells, and total values are calculated from the number of red blood cells per cubic millimeter.

RESULTS

It is apparent from the results shown in tables 1 and 2 and the figure that there is a wide variation in the normal values of all the clotting tests used in this study. This variation is also present in the disease states observed, the only consistency seen being in the so-called splenogenic thrombocytopenia group. No correlation was found between bleeding tendency, heparin retardation, protamine heparin values, Lee-White clotting time, platelet count, and prothrombin values; for example, one patient with lymphoma who had a platelet count of only 6,000 had a normal coagulation profile. Worthy of comment are the following groups of patients.

1. The so-called splenogenic thrombocytopenia group was unique in that three of eight patients who showed prolonged heparin retardation and protamine heparin titration when first studied became normal after splenectomy and remained normal, notwithstanding persistently low platelet counts. In one of these patients the heparin retardation rose on two occasions but was not associated with bleeding. In the other two, bleeding occurred after splenectomy despite normal heparin retardation and protamine heparin values. These results are at variance with those of Carr and Fowler,[10] who found a parallelism between bleeding and sensitivity of venous blood to heparin, as measured by the Waugh-Ruddick technique, in thrombocytopenia. The changes observed before and after splenectomy in the splenogenic type of thrombocytopenia were not observed in any other condition and varied significantly in other types of thrombocytopenia, such as in leukemia, lymphoma, aplastic anemia, thrombotic thrombocytopenic purpura, and purpura associated with lupus



Variations in the Lee-White and heparin retardation clotting times, showing the wide range and overlapping of normal values and those found in carcinomatosis and tuberculosis.

erythematosus. Two other patients with the splenogenic type of thrombocytopenia showed normal protamine titrations, but one of these patients had a heparin retardation for over two hours.

2. In the polycythemic group, one patient with a high hematocrit and platelet count showed extreme clotting

3. Silverman, S. B.: Modification of Waugh-Ruddick Test for Increased Coagulability of Blood, and Its Application to Study of Postoperative Cases, Blood **3**: 147, 1948. Waugh, T. R., and Ruddick, D. W.: Test for Increased Coagulability of Blood, Canad. M. A. J. **50**: 547, 1944; Studies on Increased Coagulability of Blood, ibid. **51**: 11, 1944.

4. de Takats, G.: Heparin Tolerance: A Test of the Clotting Mechanism, Surg., Gynec. & Obst. **77**: 31, 1943.

5. de Takats, G.: Sensitized Clotting Time: Simple Test for Bedside Study of the Clotting Mechanism, J. A. M. A. **146**: 1370 (Aug. 11) 1951.

6. Hirschboeck, J. S.: Blood Coagulation-Retraction Time and Its Relation to Thrombosis, J. Lab. & Clin. Med. **32**: 1424, 1947. Morrison, M.; Richter, I. H., and Loewe, L.: Increased Blood Platelet Clumping in Thromboembolic Disease, Am. J. Clin. Path. **18**: 879, 1948.

7. Lee, R. I., and White, P. O.: A Clinical Study of the Coagulation Time of Blood, Am. J. M. Sc. **145**: 495, 1913.

8. Quick, A. J.: Hemorrhagic Diseases and the Physiology of Hemostasis, Springfield, Ill., Charles C Thomas, Publisher, 1942.

9. Wintrobe, M. M.: Macroscopic Examination of Blood: Discussion of Its Value and Description of Use of Single Instrument for Determination of Sedimentation Rate, Volume of Packed Red Cells, Leukocytes and Platelets, and of Icterus Index, Am. J. M. Sc. **185**: 58, 1933.

10. Carr, T. L., and Fowler, W. M.: Observations on the Coagulation Defect in Thrombocytopenic Purpura, J. Lab. & Clin. Med. **34**: 1227, 1949.

prolongation on several occasions. The other 10 patients had normal heparin retardation and variable protamine titrations.

3. Several patients in the aplastic anemia group showed extensively prolonged heparin retardation times, with incoagulability for over 24 hours; nevertheless, there were no clinical manifestations of bleeding. In one of these patients the platelet count was 128,000.

We were especially interested in the coagulation profiles of patients with extensive tissue breakdown, such as would be found in far-advanced carcinomatosis and tuberculosis. In neither of these two groups, however, were significant constant changes demonstrable.

SUMMARY AND CONCLUSIONS

A survey was made of clotting tests to obtain the coagulation profiles of normal persons as well as of patients with carcinoma, tuberculosis, leukemia, lymphoma, thrombocytopenia, polycythemia, and aplastic anemia. The Lee-White, heparin retardation, and protamine heparin titration clotting times, the prothrombin determination, and platelet counts were utilized in this survey. There was extreme variation in the range of values observed in all groups, these variations falling for the most part, however, within the range of the normal group. The most consistently abnormal results were obtained in patients with so-called splenogenic thrombocytopenia.

Three of eight patients with the splenogenic type of thrombocytopenia had greatly prolonged heparin retardation and protamine titration values, which became normal in all three patients after splenectomy, notwithstanding persistently low platelet counts and bleeding. The same tests showed wide variation and no correlation with platelet counts in other types of thrombocytopenia. One patient with polycythemia associated with a high hematocrit and platelet count showed severe prolongation in the clotting tests. Three of five patients with aplastic anemia showed prolongation of heparin retardation time with incoagulability of the blood for more than 24 hours.

In view of the wide variation in the values obtained in both normal and diseased persons, we believe that the Lee-White, the heparin retardation, and the protamine heparin titration clotting times serve little, if any, useful function in evaluating the clotting mechanism, especially in relation to bleeding and clotting tendencies. The relationship of the platelet count and the bleeding and clotting mechanism awaits further elucidation.

1835 W. Harrison St. (Dr. Friedman).

CARE OF THE DYING

Walter C. Alvarez, M.D., Chicago

A physician is often at his best when bringing comfort to the slowly dying, to persons with diseases as yet incurable. The kindly, wise, and philosophic physician will try always to give comfort, not only by relieving physical pain but by lessening mental distress. He will also try to give comfort to the patient's loved ones, whose anguish is often much greater than that of the invalid. A man may be ready and willing to die, but his devoted wife may be almost unable to face her loss and the prospect of many lonely years ahead.

As all of us physicians know, it is not easy to walk into a home shadowed by sorrow and fear; and once there, it is not easy to find words that will be helpful and comforting rather than banal or even distressing. Often, as I have gone into a home filled with grief, I have felt like praying for such wisdom as would enable me to say only what would be acceptable and helpful. In trying to be kind and sympathetic, one can so easily become sugary and Pollyanna-ish; or one can treat the situation so airily and dismiss all thought of danger so casually that the patient becomes disgusted. He feels that he is being treated like a child.

One must also be careful to avoid words of pity, because most sick persons do not like them. They prefer, instead, to feel sympathy, as expressed in mien and behavior. Many get much encouragement just from having a strong, healthy-looking physician come into the room. They are happiest when the physician and other visitors talk and act naturally. Many a dying man would like to discuss the problems that are in his mind, but he would like to do this dispassionately, much as if it were someone else whose troubles were being talked about.

It is hard enough for a relative or friend to go into the house of the slowly dying; it is even harder for the physician, who enters presumably to cure illness and save life. It is not pleasant for him to have to admit his inability even to do much in the way of prolonging life, and it is not easy to have to stand by helplessly for weeks or months watching the invalid as he slowly dies. As new and ever more distressing symptoms appear, it is not easy to keep up an atmosphere of hope and a feeling that some helpful drug may still be found.

HOW MUCH TO TELL THE DYING

One of the most difficult problems facing the physician is how far he can safely go in the way of discussing the patient's illness with him. Usually the family asks that the physician deny that there is anything to worry about, and ordinarily he complies, if only because at college he was trained to follow this course. I think, however, that most such medical lying is wrong, usually futile, and even harmful. The patient is seldom so stupid that he is deceived. He knows that he is seriously ill, and he would prefer to have the physician talk honestly with him. In the hospital, at night when no one is around, the patient reads his medical record, or he hears nurses and interns talking about his cancer, or he submits to an operation that he soon realizes was unsuccessful or perhaps only palliative, or he is given roentgenotherapy. His wife may break down and weep so that he knows that she

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has been given the worst possible report, or his brother or a business partner may come in, and not realizing what he is doing, start talking of what must be done about certain business matters after the invalid is dead.

Then, if the doctor does not talk frankly, the patient is left with a great feeling of loneliness and isolation. When he is full of questions to which he wants answers, it is hard to have everyone putting him off. Then it is that he will be grateful to the physician who talks candidly with him. Hundreds of times during my medical life I have talked frankly with dying persons and have thereby gained their lasting gratitude. Often, too, I have said to a husband and wife, "You two either know or strongly suspect what this disease is, so why should you now be lying to one another, as you have never done before? Always before, you have faced hard things hand in hand, so why not now face this hardest of all things together?" Always they have been grateful to me for speaking in this way. It is difficult enough to go down through "the Valley of the Shadow"; it is harder to make the journey mentally and spiritually alone. Most persons who have written up their experience with cancer have stressed this fact and have expressed a wish that physicians would oftener discuss things frankly with the dying.

Some may ask: Must we always tell the truth to the very ill? No, there is no need for forcing the truth on those who ask no questions and show no desire to discuss their illness. If an apathetic old man with a big inoperable cancer of the stomach lets his sons handle the problem, if he shows no interest in the visit to my office and asks no questions, I do not force any information on him. But when a man or woman looks me in the eye and asks, "What did you find," I feel morally and legally bound to tell the truth. Often it is highly important that a man with property know of his danger so that he can put his house in order. Perhaps he must withdraw from a business or arrange trust funds for his wife and children. I remember a wealthy man whose wife deeply resented the fact that my old chief had failed to tell either of them that the patient was a very sick man. He might then have been induced, before he dropped dead, to spend a few hours with his partners, lawyers, accountants, and secretaries in explaining to them some of the intricacies of his far-flung commercial empire (details that he carried in his head), thus saving the wife years of work in closing the estate and the loss of hundreds of thousands of dollars.

I doubt if a physician who has examined an old man and has found an inoperable cancer of the prostate gland need always tell about it. Especially when the man has high blood pressure and heart disease or has had some minor strokes, it may be that he will die of one of these before the cancer kills him, and then it may be best to let him live in mental peace.

Obviously, in many cases, the decision as to whether the physician should talk or keep silent will depend on the patient's courage and willingness to hear the truth and face it. I have known cases in which a woman with hopeless cancer said, "Tell me the truth; I can easily face it. But don't tell my husband, because he will go all to pieces. I have always babied him, and in our family I have been the one to carry the heavy burdens." Women of another type will say when they come in, "If you find anything bad, don't tell me; I couldn't stand it." Such persons, when they realize they have cancer, promptly stick their head in the sand and deny that they are ill. Some go to a faith healer, and others go to quacks. I never criticize them for this, and I tell the family to let them do whatever they want to do, so long as it gives them comfort and does them no serious harm.

Fortunately, most dying persons seem to have little fear of death. Hundreds have said to me that all they feared was that dying might be a long-drawn-out, messy, or painful business. Others have worried only over the prospect of using up, on almost hopeless operations and treatments, thousands of dollars that they would prefer to leave for the support of wife and children.

THE PHYSICIAN'S ATTITUDE TOWARD THE DYING

Unfortunately, because interviews with the dying and their relatives are somewhat difficult and uncomfortable, some physicians dodge them, and when they are called, refuse to go to the house of fear and sadness. But this can have undesirable results. Perhaps, during the evening, the man collapses. The family, in great alarm, calls the physician, but he, satisfied that there is nothing more that he can do, does not go. The patient dies, and ever afterward members of the family keep saying, "If only the doctor had come that night, he might have saved father; he might have pulled him through." Thus, such actions should be avoided, because so often they hurt the bereaved and leave bitterness not only against a particular physician but against the medical profession as a whole.

Because the handling of the slowly dying and their families is so important, it is unfortunate that so rarely does anyone ever discuss the subject in medical schools, at medical meetings, or in the journals. An excellent little book on the medical care and nursing of the dying is the one by Worcester.[1] Every physician in the land should read and re-read it.

How wonderful it is when a physician, by his kindness and devotion to a dying person, obtains the deep affection of the family. In such a case one will find that until the patient's last gasp, the physician kept trying to bring relief from suffering; and until the end he so handled the situation that after the funeral no one of the relatives ever felt like saying that if only he had done this or that, or had had a consultation, or had called another physician the loved one might have lived. In my younger days, when I used to take care of the acutely ill, whenever I saw that the disease had become very serious, I would say to the family, "I will not try to hide from you the fact that I am anxious, just as you are. I would like to call one or more consultants, and I would like to know if you have any preferences. You may even want me to withdraw in favor of some older doctor; in which case do not consider my feelings in the matter, for I will not be hurt. I have but one desire, and that is that everything possible be done to save your loved one." Usually this talk left the family

1. Worcester, A.: Care of the Aged, the Dying and the Dead [lectures], Springfield, Ill., Charles C Thomas, Publisher, 1935.

feeling friendly toward me, and rarely, then, did they accept my offer to withdraw. They were satisfied with a consultation or two.

Many years ago, in California, while teaching a class in the handling of patients, I asked each student to write a paper describing some experience he or his family had had with a physician, an experience, good or bad, that had taught him much. One student told of the time when his father had had a stroke and lay half paralyzed and breathing stertorously. The first physician who was called looked at the patient, shrugged his shoulders, and said, "It's just a stroke, and there's nothing we can do." He took his hat and left. Later in the day, when the family, having become more and more distressed and worried, again sent for him, the man did not come. Another doctor, then summoned, came quickly. He made a careful examination, which pleased and reassured the family. He explained the situation and gave them hope. He told them of those many cases in which a person with a stroke learns to talk and walk again and then lives on for many years. He telephoned for a fine nurse who, he knew, would handle the situation well. He ordered medication and a diet. Noticing that one old aunt was upsetting everyone with her incessant and pessimistic talk, he told her he had a hunch that she was a good cook, and so he wanted her to go home and start making a thick veal broth for the patient's nourishment. Delighted with this commission, she hurried off—to the great relief of all present.

The essential point was that here was a wise physician, a leader of men, who, coming into a house in which all was fear and turmoil, so acted as to leave it in peace, with the family hopeful and feeling that everything was being done that could possibly be done. Later, at intervals, the physician kept dropping in, until the patient was better and out of danger. Then he got a physiotherapist to come and massage the weakened muscles and to teach the man to get up and about. No wonder that thereafter the family was devoted to that physician and was in the habit of turning to him for help in every emergency.

Handling Different Age Groups.—Obviously, the problems of the physician vary according to whether the person who is dying is young or old, easily frightened and fearful, or stoical and acquiescent. Children usually adjust quickly to grave illness. They accept what comes, and many who are dying seem to be but little aware of what is happening. They live for the day at hand. Every good physician knows that in most cases of serious illness in childhood he must keep fighting for a cure until the very end. Many a child has recovered after all hope for him had been given up. When one is young his powers of recuperation are great, and a miracle can easily happen.

Teen-agers and young adults who are dying will be more conscious of what is happening and more reluctant to go before they have had a chance to live. Anyone who wants to know how rebellious and bitter a gifted young man can be about dying (from multiple sclerosis) should read Barbellion's remarkable "Journal of a Disappointed Man."[2] Men and women a little older can be much distressed at having to go and leave a greatly loved spouse. Many men are much worried over having to leave dependents unprovided for. I remember the sorrow of a fine young physician who, the day after he opened his first office, found he was hopelessly ill with cancer. After years of graduate education and preparation for his lifework, it was so hard to give up and leave.

But many, even of those cut off in the full vigor of life, make no protest. Thus, Hans Zinsser, the bacteriologist, who had always found great zest in life, when faced with his approaching death (due to leukemia), made no complaint. Interestingly, he mused over the fact that the body that had always served him so well was now going to pieces and would soon leave him. Concerned over the future loneliness of the loved one he was about to leave, he wrote for her some of the most beautiful sonnets in the English language.[3]

> When I am gone—and I shall go before you—
> Think of me not as your disconsolate lover;
> Think of the joy it gave me to adore you,
> Of sun and stars you helped me to discover.
>
> And this still living part of me will come
> To sit beside you, in the empty room.
>
> Then all on Earth that Death has left behind
> Will be the merry part of me within your mind.

Less distressing, usually, is the problem of slow death when it comes to the aged, to those whose race has been run. Some have fared so well that they are ready to go. Others have experienced so little besides failure, disappointment, sorrow, and bitterness that there is not much to hold them here. They, too, are ready to go. Others would prefer to stay on a while. They could still enjoy life, and they would love to see their grandchildren grow up. But they realize it is not essential, and so they likewise make no protest over having to go. I shall never forget the sad-faced judge of 60 who came with his lungs filled with cancer. Looking me in the eye, he asked, "How long can I last?" When I told him I feared it was a matter of only some two months, he said, "Fine; that's good. That will give me just enough time to wind up my affairs." When I remarked on his courage, he said, "No, that isn't courage. I'm perfectly willing to go. Since my dearly loved wife went, this world has had no hold on me. I'll be glad to go and join her." Another older man, with a horrible cancer of the esophagus, said, "Just let me say goodby to my son, who is on his way to see me, and then the quicker I go the better it will please me."

Other older persons who, for years, have suffered the tortures of a failing heart, crippled joints, or a series of strokes are often glad to go. Some keep asking, "How much longer has it got to be?" They want to get on with their job of dying. Osler used to speak of terminal pneumonia as "The old man's friend." In so many a case it is kindly in that it puts an end to months or years of suffering. With these old persons who have suffered long, the physician is usually safe in discussing death and dying. With such persons he need fear no embarrassment about mentioning these things. The patient will show little fear, and all he may ask of his physician is that he prevent

2. Cummings, B. F. (W. N. P. Barbellion, pseud.): Journal of a Disappointed Man, Garden City, N. Y., Doubleday, Doran & Company, Inc., 1919.

3. Zinsser, H.: Spring, Summer, and Autumn; Poems, New York, Alfred A. Knopf, Inc., 1942. Quoted with permission.

suffering at the end. As Worcester [1] says, we can tell patients that rarely is there much sign of suffering in the last few hours. There may be a great weakness, then a loss of ability to feel pain, and finally a dropping off to sleep. Some middle-aged persons see some advantage in dying before they are old and infirm and perhaps blind or deaf, or childish, or a terrible burden to others. Hans Zinsser [3] had this in mind when he wrote,

> Now is Death merciful. He calls me hence
> Gently, with friendly soothing of my fears
> Of ugly age and feeble impotence
> And cruel disintegration of slow years.

ENCOURAGING THE INCURABLY ILL

In an individual case the physician's problem depends to some extent on the swiftness with which death is approaching. Sometimes the disease is an acute leukemia, and then death is likely to come in a matter of weeks. The patient has little time in which to think about things or to face the prospect of dissolution. With a chronic leukemia, death can for a while be put off, and then the person has time in which to get used to the ever-present threat to his life. I often say to the person who has had a cancer removed and who is now living in daily dread of its reappearance, "I know it is hard to live on a powder barrel, but it can be done, and in a year or two you will get used to it."

Sometimes I remind these persons that a man just turned 80 knows that the chances are about 50-50 that he will not live out the year, and yet he goes on happily, not worrying about the future. There is many a man with a slowly fatal disease who needs to think often of all the old persons living cheerfully around about him—persons whose doom is even closer and surer than his own. They could be much disturbed if they were foolish enough to think often of it, but, wisely, they do not worry; instead, they just go on about their business, and the man with cancer should do the same.

As I have intimated, some persons fear death immensely more than others do. I remember two physicians, each of whom learned at about the same time that he had an inoperable cancer. One quickly became tearful and so demoralized that he could not work; the other worked on cheerfully each day as if nothing unusual were going to happen. I will never forget the woman I took care of, years ago, who had a failing heart and an overpowering and terrible fear of death. Although she was a gentle soul, a good wife and mother, and blameless as far as I could see, death meant to her endless hell-fire, and she seemed almost to see the flames and to feel their heat on her face. For a few years she kept begging me to save her, but eventually the long nights of shortness of breath wore her down, and finally she told me she wanted to go and have it over with.

Some persons, like the man in Jack London's story, "The Love of Life," have a tremendous desire to live, while others lack this desire. Naturally, the physician will have to talk to these persons differently. Some need much encouragement and comforting; the others do not. There are thousands of persons today who are staving off death only by sticking religiously to some form of treatment, and sometimes the physician has to encourage them to carry on. He must keep them from getting discouraged and weary so that they will not stop their treatment, even for a time. I am thinking of persons with a severe diabetes, who must constantly keep taking insulin, or persons with Hodgkin's disease or leukemia, who must keep taking one course after another of roentgenotherapy or 4-aminopteroyl glutamic acid ("aminopterin") or some other drug that racks them with nausea and vomiting. From time to time such persons will ask, "What is the use of all this struggling just to keep alive? Wouldn't it be better to quit and let Nature take her course?" The physician can often help these persons to see some use to life, and he can give them reasons for carrying on. Often my best argument against such passive suicide has been that the invalid is much needed by someone—someone whom he should not desert.

HELPING THE SLOWLY DYING

Those who take longest to die are sometimes the ones who suffer a series of minor strokes, for they may be slowly dying for 10 to 20 years. I remember a man who lived on for 30 years after three such strokes had left him childish. As Osler used to say, these persons take as long to die as they did to grow up. Step by step they lose a bit of memory or some of the spring in their walk. Their strength goes, and perhaps their joy of life. They become forgetful, weak, miserable, irritable, hard to get along with, and eventually childish. As a wise old lady said, "Death keeps taking little bites of me." Such a person may become much changed after a dizzy spell or a vomiting attack, or following a few minutes of confusion while crossing a street. After that a hand may feel numb and clumsy, and the bank may complain about a changed signature on checks. There may be aches here and there, much loss of weight, and perhaps later a Parkinson syndrome with a poker face and a shaking hand. A man's legs may become "rubbery," and he will then shuffle along with short steps. Many a man in this state becomes a terrible trial to his family. He will wear down his poor wife, and, if he has to live with a daughter and her children, he may even cause so much annoyance as to break up her marriage.

It is highly important that the physician learn to recognize this disease early, and then, if he is kind, he will try to convince the family that their parent is ill and not just "ornery" and "cussed." The family must be told to stop telling the man to "snap out of it." He cannot do it, because much of his brain has been destroyed. Perhaps when they learn the truth, the family will be more patient, sympathetic, and tolerant. Often in these cases the man's employers also need to be told that the poor fellow's days of usefulness are over, and, in some cases, when the man starts squandering the savings of a lifetime, he must be declared legally incompetent. Unfortunately, with his brain injured by a minor stroke, many an oldster feels very uncomfortable and unhappy. All the joy in life has gone, and I know of no way to alleviate the distress. No sedative seems to help.

All slowly dying persons can be helped by a kindly physician. They can be cared for; their sufferings can usually be lessened; and they can be given comfort, support, and encouragement. For them life can often be lengthened and made worth while. They should never be cast off and neglected simply because they cannot be

"cured." Many aged, ill, and crabbed persons have so few friends that they come to love the physician who sees through them and their blustering and who likes the sweet, frightened, and very lonely being that lives inside the ailing body. The oldster often realizes that he is hard to get along with, and hence he is the more grateful when his physician likes him and makes a friend of him.

The Family and the Aged.—Sometimes the physician can greatly help an ailing oldster just by siding with him against his children, who, with the best of intentions, want to take from him every joy in life. I well remember the two women of 50 or so who brought into my office their youngish-looking and well-groomed father of 80. They said that he had complained of a little headache, and so they had taken him to an internist. This man, after finding some hypertension, had forbidden the fellow his pipe, his drink of Scotch at bedtime, his red meat, his fats, his table salt, his puttering in the garden, and his daily strolls about the town. Father had rebelled. He had taken to smoking out behind the garage, and now his daughters wanted me to read the riot act to him and make him behave.

I told them that my sympathies were all with their father, and I would not join with them in any effort to take away all his comforts. I was sure he would live longer without that form of persecution that goes sometimes under the name of love. I told them that some day I was going to found a society for the prevention of cruelty to aged parents by their loving and overly solicitous children. I told these women to remember how hard it is for old persons to change the habits of a lifetime. Because of this type of rigidity, I never, if I can help it, prescribe a diet or a strict regimen for an old man or woman. I also told the two women that, as far as I could guess, their father was the same intelligent and urbane gentleman he had always been and I could not see why they should now be treating him as they might a wayward or feeble-minded child. I warned that if they continued on that course, they would only earn his dislike and distrust. I told them that if ever my children, who have always treated me with love and respect, start trying to order me around like a child, they are going to have a stubborn mule on their hands!

As Worcester [1] says in his book, the tendency of many persons to ignore their old relatives and to make no effort to talk to them often hurries them on into a senile dementia. An old man, when treated as if he had no sense and no personality, may finally accept the role. One of the cruelest things children often do is to deny their parents or grandparents the privilege of helping about the house. The oldster loves to be busy and to earn some of his keep. But grandfather is not allowed to shovel snow or to cut kindling, and grandmother is not allowed to mend the clothes or to do some of the washing. Such forced inaction, with the resultant boredom and lack of contact with life, can only hasten the coming of childishness.

DRUGS, DIETS, AND RESTRICTIONS

Every effort should be made to make the slowly dying person less uncomfortable. Some of the causalgia-like pains and arthritic aches that follow strokes are very resistant to sedatives, and even morphine may not help. My belief is strong that oldsters who are suffering great pain should have all the dihydromorphinone (dilaudid®) hydrochloride, methadone hydrochloride, meperidine (demerol®) hydrochloride, or morphine they need to get some relief. What if grandfather does live long enough to get a bit habituated to the drug? If it will only make his last weeks of life bearable, his children should be very grateful. Often a deeply religious family will want to deny their loved one the use of sedatives, fearing that these will slightly shorten life. Actually, morphine tends to lengthen life, because it helps to counteract the constant pain that will soon debilitate the patient and perhaps even kill him. It is a cruel thing to compel a man, night after night, to lie awake in pain watching himself die. I always give a barbiturate to the dying person who cannot sleep or rest. Rarely, if ever, will it do any harm. A short-acting drug such as bromisovalum (bromural®) or secobarbital (seconal®) sodium is particularly helpful for the patient who wakes at 2 or 4 a.m. and cannot go to sleep again. Often, also, the use of a barbiturate serves to cut down on the amount of morphine needed to relieve pain and mental distress.

As I have said, because it is very hard for oldsters to change the habits of a lifetime, it is doubtful if we physicians should ever prescribe a diet unless it is really essential, as in the presence of diabetes, severe gout, or swelling of the legs. I see little justification for taking away sodium chloride simply because the blood pressure happens to be high. A sodium-poor diet, such as can be arranged for at home, is likely only to annoy and depress the patient. It will take away his appetite, and, as a result, he may become thin and weak and querulous. Usually it is best not to treat the patient for high blood pressure; theoretically, a high blood pressure might be beneficial in that it might keep the blood pulsing through narrowed arteries.

As I have mentioned, as far as possible we physicians should avoid depriving the aged and dying of their usual comforts. I remember a man who died raving mad because his daughter kept hounding him all the time, hiding his pipe, and refusing him his bedtime glass of beer. No wonder he got the idea that she no longer loved him and was trying to kill him to get his money. She, of course, had been motivated only by the hope of prolonging his life, but all he could see was persecution. If asked, he doubtless would have said that he had no desire to prolong a life that no longer gave him pleasure. Worcester [1] writes of an old man who told him, while dying at the end of a year's strenuous treatment, how much more miserable all the restrictions and deprivations had made him. This rebuke cured Worcester of ever again yielding to the temptation to take away what few comforts an old person has.

A question that we physicians often fail to try to answer honestly is, if the oldster who is slipping does give up all his pleasures, will he surely lengthen his days? I doubt it. When Abraham Myerson's father suffered a coronary infarct, he was told to stay in bed. But next day, as usual, he went out to the park to chat with his cronies. When his son found him there and reproached him for his rashness, the old man asked, with a twinkle in his

eyes, "How much life will you guarantee me, Oh doctor, if I obey your orders? And how much value shall I place on a month, six months, a year more of that chronic illness, extreme old age?" The son could not answer, so he smiled and left his father with his friends.[4]

No, the fact is that we do not know that the restrictions we are so apt to prescribe will prolong life, either in the aggregate or in the case of the particular oldster who sits apprehensively there on the other side of our desk. Perhaps the man would live even longer if we were to let him enjoy life as he pleases. We have as yet no statistics to supply the answer.

LEARNING THE WISHES OF THE FAMILY

Sometimes, when an old person is close to death, the relatives should be asked if they wish the physician to keep carrying out efforts at resuscitation with much oxygen and endless injections of stimulants, or if they would prefer to let the loved one pass peacefully when his or her time has evidently come. Sometimes, as in the case of a patient suffering from brain tumor, the physician should point out that even if, through some miracle, he could prolong life for a few weeks, the person would be left so badly crippled in mind and body that he or she would be utterly miserable and perhaps in constant pain. Often the family knows that the patient would be much better off dead, but they do not have the courage to say this, fearing that they would be criticized by someone.

Often when a physician talks frankly to a dying man's family they will indicate that they do not wish to prolong the anguish the patient obviously feels. Worcester [1] speaks of this problem and feels about it as I do. I have known old men who, on being called back to life after a coma that looked almost like death, have been distressed to think that they would have to go through the miserable job of dying all over again. Some physicians feel that they have no option and must always keep struggling to prolong life, but others are guided at the end by the wishes of the family. I do not wish here to advocate euthanasia or the neglect of patients; rather I am talking only about relaxing some effort for old persons when they are obviously beyond human help. Of course, everyone will want to continue to the end to supply good nursing. What I am thinking is that some day when I myself lie dying, I hope that I will have by me some wise and kindly physician who will keep interns from pulling me up to examine my chest, or constantly puncturing my veins, or putting a tube down my nose, or giving me enemas and drastic medicines. I am sure that at the end I will very much want to be let alone. As Worcester says,[1] "All such disturbance of the dying patient is inexcusable."

I need hardly remind the educated physician that when death is imminent, he should ask the patient or his family if the ministrations of a priest or a minister are desired. The final rites of the church are tremendously important to some persons.

RADICAL SURGERY FOR CARCINOMA

With some surgeons now performing extensive operations in an effort to cure widespread cancer, the question will often arise whether such surgery is justified in an old man or woman when the chances are that death will come anyway? It would seem that in these cases the patient should be given the facts and then allowed to decide for himself. Some patients, when faced by this question, prefer to die intact, without the operation. When life can be somewhat prolonged by a gastroenterostomy or an enteroanastomosis, here again the wishes of the patient should be ascertained. Some persons prefer not to spend their money to such poor purpose but insist that it be kept for the education of a child or the care of the wife.

In many cases radiotherapy should be tried with the hope of either curing illness, prolonging life, relieving pain, or keeping up the morale of patient and family. New drugs can be tried, and with tumors of the sex organs, sex hormones can be given. Rarely should the physician order a chordotomy or a topectomy for the relief of pain. Such treatments are strenuous and not always successful, and they can cause even more distress than the patient had to begin with. Whenever possible, hope must be given the patient, and new treatments must be watched for. Never must the sufferer be left to die in pain and neglect.

SUMMARY

Suggestions are given for the care of the dying. It is not easy to go into the house of suffering and there to say only helpful words, but the physician must go, and he must learn to give comfort and help. Often, when asked what is wrong, he must speak frankly and honestly. Always he must so care for the dying that after the funeral the family will have no regrets and will feel that everything possible was done to save life.

It is pointed out that many old persons do not greatly fear death; they are ready to die. Physicians must be especially kind to the aged and the dying. They must not bind them with restrictions and prohibitions designed to make them live a few months longer. These restrictions only make their remaining days unhappy, and the physician cannot be sure that they will lengthen life. Perhaps the old person does not want days of pain lengthened. What the physician should do is to give comfort and ease pain.

700 N. Michigan.

4. Myerson, A.: Speaking of Man, New York, Alfred A. Knopf, Inc., 1950.

Emergency Resuscitation.—Physicians encounter the need for emergency resuscitation most frequently in the operating room when the anesthetist or one of his assistants attempt artificial respiration, usually by compression of the chest from the sides. From my observations this maneuver moves no air whatsoever and is a waste of time. It is far better to have the anesthetist provide a certain amount of ventilation by rhythmic compressions of the anesthesia bag, giving oxygen at the same time. . . .

While the restoration of a supply of oxygen to the body is the great necessity, the use of pure oxygen to combat an immediate emergency of oxygen lack is not of critical importance. The oxygen of the air is sufficient to meet immediate needs if artificial respiration brings it into the lungs. On the other hand, if the patient is the victim of chronic oxygen lack, i. e., prolonged asphyxia, then judicious use of pure oxygen may accelerate recovery and give great comfort to conscious patients. It is my opinion that oxygen therapy, as we understand it, is much more significant in combatting prolonged asphyxia than in meeting the acute emergency requiring resuscitative measures.—Cecil K. Drinker, M.D., Physiologic Principles of Resuscitation and Oxygen Therapy, *Postgraduate Medicine*, June, 1952.

CLINICAL NOTES

RUPTURE OF THE AORTIC VALVE

William B. Bean, M.D.
and
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When a healthy person during vigorous exercise or straining has a sudden cough and a sense of suffocation or pain in the chest with severe congestive heart failure following, the largely unsolved problem of just why heart failure occurs when it does is highlighted. In some cases the symptoms progress without improvement from treatment and death soon follows. Rupture of the aortic valve from strain is one cause for such a sequence of events. Though rare, it is easy to recognize if one keeps in mind the characteristic signs, symptoms, and clinical course. This report illustrates the salient features of the syndrome in a case in which the condition was diagnosed during life.

C. P. Howard,[1] in 1928, wrote the classic paper on the rupture by strain of the aortic valve. One of us (W. B. B.) recently reviewed the subject of precordial noises heard at a distance from the chest [2] and included many examples of ruptured aortic valve, some of which have been published since Howard's review. In about a third of the nontraumatic cases of ruptured aortic valve, those without a blow or impact, the murmur was so loud as to be heard readily by the unaided ear at a distance from the chest, and in a good many instances the noise had troubled the patient. The usual quality and loudness of the murmur have stimulated much interesting medical metaphor, including likening the noise to "the croaking of a frog," "the cooing of a dove or pigeon," "rumbling, rustling noises," "humming noise," "whistling noise," "a buzzing in the chest," "musical murmur or thrill," "a whinning noise," and even "a rattle in the head." Bellet and his associates [3] have made a notable contribution to our understanding of such precordial noises in their study of aortic insufficiency, emphasizing the part played by syphilis in eversion of a diseased aortic cusp. Nichols [4] has emphasized the musical quality of the murmur, and Scott [5] expressed the belief that eversion of an aortic cusp was a major cause of such loud musical diastolic murmurs. Scherf and Boyd [6] described the sea gull murmur in persons in whom an aortic valve leaflet ruptured after physical strain or trauma. "These patients often present a musical diastolic (sea gull) murmur which may be heard at some distance from the chest wall by the unaided ear. The murmur is usually accompanied by a thrill. Immediately after the provocative exertion, severe pain is felt over the heart and midsternal region as the result of acute cardiac dilatation and stretching of the pericardium. This form of aortic regurgitation, like other types, is more common in males. It developed in one of our patients during a brawl and in another while playing soccer. Both patients had syphilitic aortitis."

Kissane, Koons, and Clark [7] reported two additional cases in which rupture of the aortic valve occurred. Since there is still much individual variation among case reports and but few instances have been recognized during life, we wish to put on record the symptoms, signs, and early death of a patient who was recently on the medical wards of the University Hospitals.

REPORT OF A CASE

The patient, P. D., was a 41-year-old white man, a cement worker and part-time farm laborer. He and several members of his immediate family had dislocation of the lenses. There were, however, no other stigmas or arachnodactyly. He had never had rheumatic fever or any other seriously incapacitating illness. When he was examined for the Army, in 1941, nothing was found wrong with his heart, but he was disqualified because of his dislocated lenses. His past history was otherwise noncontributory with the exception of rather rare spells of shortness of breath with exercise and occasional episodes of palpitation with tachycardia, neither of which had inconvenienced him or interfered with his work. On Sept. 19, 1951, eight weeks before hospitalization, dyspnea suddenly began while he was putting a cement floor in a hog house. Coughing was distressing during the acute episode, and it was his opinion that the acrid dust was choking him. He did not recall any direct connection with an act of lifting or straining, although he jokingly referred to casually hefting heavy beams and equipment weighing 100 lb. After this event, he had dyspnea even at rest and on exertion he became very short of breath. His cough continued and at times was productive of fairly large amounts of blood-streaked sputum. Orthopnea and edema increased in severity despite treatment by his family physician. During November he had three episodes of syncope, characterized by a feeling of generalized warmth, sweating, air hunger ("gulping of air"), limpness, weakness, and loss of bladder control. The syncopal episodes were not associated with convulsions or loss of consciousness but, rather, profound and prostrating weakness. They lasted about 10 minutes.

Late in November he began to have paroxysms of orthopnea at night. Dyspnea became so severe that he was unable to work; he was hospitalized elsewhere for nine days in November and was digitalized and treated with oxygen. Two weeks prior to admission, his abdomen became swollen and he expelled much gas per rectum. He had no edema. When examined on admission, he was found to have bilaterally dislocated lenses together with the usual features of congestive failure and the peripheral and cardiac signs of free aortic regurgitation. The heart was large and overactive, the overactivity being chiefly left ventricular. The left border of cardiac dulness was in the anterior axillary line. He had a diastolic thrill over the precordium, particularly at the base. The thrill was most intense in the second right interspace and the third and fourth left interspaces. The murmur at the base of the heart was very loud but not at all musical; it spread all over the precordium; in addition, over the mitral area there was a presystolic rumble of an Austin Flint murmur, which on admission had been mistaken for the murmur of mitral stenosis.

A loud systolic murmur was heard at the base. There was no aortic valve closure sound, but the second pulmonic sound was loud. The diastolic murmur was so loud that it was clearly heard by the unaided ear 6 in. (15 cm.) from the chest in a quiet room. It was not audible to the patient, although he was troubled by

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6. Scherf, D., and Boyd, L. J.: Cardiovascular Diseases, Philadelphia, J. B. Lippincott, 1947.
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palpitation. Pulsation of the subclavian and carotid arteries bespoke the wide pulse pressure with the arterial blood pressure 150/0 mm. Hg. Pistol shots, Duroziez' murmurs, Corrigan pulse, and capillary pulsation gave further evidence of rapid leaking of blood out of the arterial system. Fluoroscopic study revealed extreme left ventricular enlargement with no sign of left auricular enlargement. Electrocardiograms revealed the pattern of left ventricular hypertrophy and digitalis effect. A roentgenogram of the chest revealed great cardiac enlargement with a Danzer ratio of 0.67 and congestive changes in the lung fields. His liver, slightly tender, was felt 2 cm. below the rib margin, and there was a moderate degree of benign prostatic hypertrophy. Urinalysis showed a specific gravity of 1.007, a pH of 6.5, and occasional white cells in the sediment. The hemoglobin was 14 gm., red blood cell count 4,460,000, and white blood cell count 5,900, with the differential smear containing 47% polynuclear leukocytes, 43% lymphocytes, 5% monocytes, 3% eosinophils, and 2% basophils. The Kolmer and Kline reactions were negative. The sedimentation rate was 21 mm. in an hour. The sputum was negative for acid-fast bacilli. During his two weeks' stay in the hospital, he improved only slightly; he was dyspneic even at rest and had a small exercise tolerance. After discharge he continued to do fairly well at home, although he had several episodes of extreme difficulty with shortness of breath. After one such episode, he died rather suddenly, on Jan. 19, just four months after the beginning of his difficulty. No postmortem examination was made.

COMMENT

Reports of cases of rupture of the aortic valve from strain are rare enough so that further reports are needed to fill out the details of the clinical syndrome. Our patient presented some unusual features. First, did he have an incomplete form of arachnodactyly? Congenital cardiovascular defects are common in this condition,[8] but it is not necessary to introduce this diagnosis in our patient, since the normal aortic valve may rupture under the influence of vigorous straining.[6] We have no autopsy to settle the issue. The onset as a sudden event in a life unmarked by serious cardiovascular disease is characteristic. Cough and a sense of strangling marked the beginning, and the trouble progressed steadily with little dramatic change except the syncopal attacks until death four months later. He had no pain, which is unusual; he interpreted the cough as resulting from irritation due to the acrid dust of the hoghouse he was fixing. These details in the history misled the resident staff until their true meaning was disclosed in a careful review of the circumstances in which the trouble began. The inexorable downgrade course of his illness, the indifferent response to the accepted therapeutic measures, and death within four months are typical in persons with ruptured aortic valves. One of the unique features is the loudness of the murmur, which was clearly audible to the unaided ear 6 in. from the chest wall. This has been noted in about one-third of such cases [9] but probably is commoner since it will be overlooked unless specially sought. He was troubled by no subjectively perceived noises such as may be distressing to some patients. The murmur lacked the musical quality of a cooing dove or a humming top described in some instances. Without careful attention to the history and awareness of the possibility, we found the clinical signs confusing; and the Austin Flint murmur had been interpreted as the murmur of organic mitral stenosis, thought to be associated with free aortic regurgitation caused by rheumatic heart disease, which we encounter often without any story of acute rheumatic fever. The x-ray and fluoroscopic findings were compatible with changes caused by severe aortic regurgitation, and the left auricle was not enlarged.

In these days of cardiac surgery it is well within the bounds of reason that operations may be devised that will correct the lesion acquired when an aortic cusp ruptures. For this reason, if for no other, it is well to keep in mind the clinical picture of aortic valve rupture from strain, for the usually normal heart and the often normal valve present an ideal situation for surgical intervention.

CONCLUSION

The signs, symptoms, clinical course, and death of a patient whose aortic valve ruptured after strain are discussed. The signs were those of severe aortic regurgitation; the symptoms were chiefly respiratory, including severe and persistent cough, and the course that of progressing heart failure with little response to therapy. Death occurred after four months. It is possible but not certain that the patient had a preexisting valve lesion associated with arachnodactyly. We suggest that this lesion should be correctible by surgical operation.

University Hospitals.

8. Bean, W. B., and Fleming, J. G.: Arachnodactyly: Report of a Case Complicating Pregnancy at Term, Ohio State M. J. 36: 155, 1940.
9. Howard.[1] Bean.[2]

CRANIOPAGUS TWINS

REPORT OF A CASE

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A woman, aged 29, was first seen on June 13, 1951, at which time she stated that her last menstrual period was on Dec. 19, 1950, giving the estimated date of confinement as Sept. 25, 1951. The pregnancy had been uneventful, with no nausea or vomiting, no bleeding, and no symptoms of abnormality. At the first examination, a blood Kahn test was negative, the blood cell count was within normal limits, and the urine was normal. She stated that she had gained 18 lb. (8.2 kg.). Examination of the abdomen disclosed the possibility of twins, with one in a transverse position, and a fetal heart tone of 135. Only one fetal heart tone was heard, owing to the hydramnios present.

The patient was admitted to St. Anthony's Hospital on Sept. 16, 1951, at 3 a. m., at which time examination showed a blood pressure of 140/90 mm. Hg. The fetal heart tones were 144 in the left lower quadrant. Contractions lasting 30 to 35 seconds were occurring at two minute intervals. By 6 a. m. the contractions had almost stopped, but there was a slight bloody discharge. At 7:30 a. m., 2 mm. of posterior pituitary (pituitrin®) was given to stimulate the contractions, after which they became almost continuous. Heart tones could not be heard. Examination at 8:15 disclosed a completely dilated cervix, with the presenting part floating. The patient was moved to the delivery room, the bag of water was ruptured, a foot came down, and delivery of the infant was accomplished by breech extraction at 8:58 a. m. When an attempt was made to lift the baby from the vulvar opening, it was found to be attached to the cranium of the second infant. The delivery was extremely easy without episiotomy and was completed at 9 a. m. The cords were clamped and cut. Both cords were found to be wrapped around each other continuously, up to the single placenta that was present. After delivery of the babies, the mother was given posterior pituitary intramuscularly and ergot intravenously; but, shortly after, the uterus became relaxed, and pressure was required to hold it in place. The postpartum convalescence of the mother was otherwise uneventful.

Family History.—On the mother's side, the great-grandparents of the twins are still living. They had 14 children but no twins. One of the daughters of these great-grandparents had twin girls. The grandparents are also living and have had three children, two of whom have had twins. On the father's side, the great-grandparents are deceased. They had six children, none of whom was twins. The grandparents, still living, have had nine sons and three daughters, including one set of twins. The present father is one of these twins. He was born prematurely and weighed only 1½ lb. (680 gm.) at birth. The other twin died. The children of the patient are 7 years, 4½ years, and 2 years old. The fourth child died at 8 months of age of an unknown cause.

Clinical and Laboratory Findings in the Twins.—Both twins are males. Their birth weight together was 11 lb. 12 oz. (5,329 gm.). Their measurements at birth were as follows:

Birth Measurements	First Twin	Second Twin
Length	18 in. (45.72 cm.)	17¾ in. (45.08 cm.)
Head (circumf.)	12¾ in. (32.38 cm.)	12¾ in. (32.38 cm.)
Chest (circumf.)	13 in. (33.02 cm.)	13 in. (33.02 cm.)

Remeasurements on Sept. 24 disclosed the head of the first baby to be 13¾ in. (34.92 cm.) in circumference and the head of the second baby to be 13¼ in. (33.66 cm.). A small hematoma on the posterior portion of the second baby's head probably accounted for some of the increase in circumference. The heads have remained constant at this measurement to the date of writing (Oct. 27, 1951).

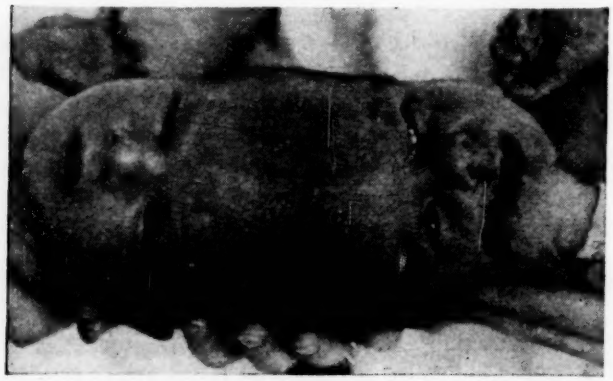


Fig. 1.—Craniopagus twins, showing their symmetrical junction at the upper half of the calvarium.

The general condition of the twins was essentially normal, except that there was a loud systolic murmur over the entire chest area of both babies. The murmurs were heard best at the left borders of the sternum and in the region of the second interspace. The first baby had a definitely louder murmur than the second. There was a distinct second sound, with no signs that this was a continuous machinery type of murmur such as seen in patent ductus arteriosus. The skin was of normal color, and the absence of cyanosis was rather against the diagnosis of a pulmonary stenosis or the tetralogy of Fallot. Based on electrocardiographic findings (see table), the diagnosis for each twin was sinus tachycardia with right axis deviation. These findings give the impression that both Siamese twins have congenital lesions, which probably consist of a combination of interauricular and interventricular septal defects. It is difficult, of course, to delineate accurately such lesions in children of this age, and possibly if the children continue to live, a more accurate diagnosis can be made later.

It was interesting to note that in the first baby the temperature was 97.6 F (36.4 C), and the pulse rate was 98, while the second baby had a temperature of 97.8 F. (36.6 C) and a pulse rate of 110. The first baby's pulse rate has continuously been low in comparison with that of the second baby, the pulse rate of the former varying from 98 to 102 and the rate of the latter from 110 to 120. The urinary and bowel functions are separate and independent. Crying and sleeping are also independent functions.

A laboratory examination of these twins showed that the first baby had a red blood cell count of 5,500,000, a white cell count of 8,150, hemoglobin 19 gm., and a clotting time of 4½ minutes. The second baby had a red cell count of 5,300,000, a white cell count of 6,250, hemoglobin 19.6 gm., and a clotting time of 4½ minutes. Both babies were Rh positive. In an attempt to determine if their blood supply was connected, the first baby was warmed with hot water bottles, raising its temperature 1.2 F (0.67 C), at which time in the second baby the temperature

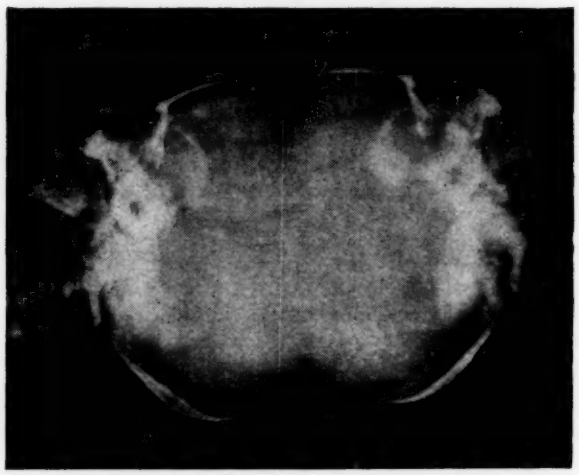


Fig. 2.—Lateral view of the skulls of the craniopagus twins, revealing the absence of the superior portion of the bony vault on each twin.

became elevated about 0.2 F (0.11 C). When the second baby was cooled down to a temperature of 97.6 F (36.4 C), the temperature of the first dropped 0.2 F (0.11 C). This test was suggestive but inconclusive. Phenolsulfonphthalein was then injected intramuscularly into the first baby. When sodium hydroxide was added to a voided urine specimen of the first baby, a pink reaction was demonstrated after 30 minutes. The pink reaction was first seen in the second baby 10 minutes later. These tests were repeated on both infants 90 minutes later, with a positive reaction, demonstrating a crossed blood supply, and quite probably an adequate blood supply because of the quick reaction time.

Roentgenograms of the babies' skulls (fig. 2 and 3) revealed an absence of the superior portion of the bony vault on each

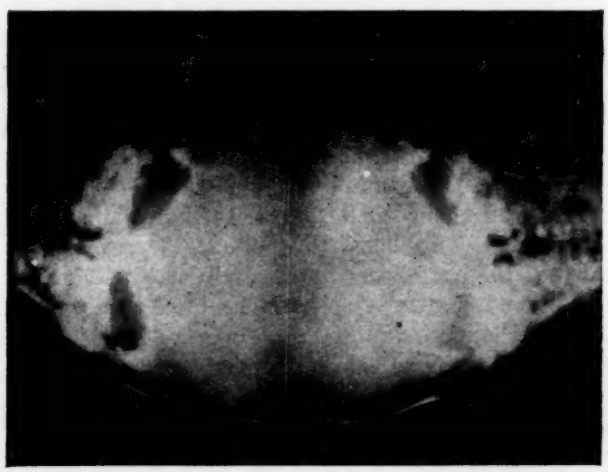


Fig. 3.—Anteroposterior roentgenogram of craniopagus skulls, in which a radiotranslucent line clearly indicates a separation of the bones of each fetal head.

twin. Also absent were the superior portion of the frontal bone, the right and left parietal bones, and posterior portions of both parietal bones; however, the anterior lower portion of the frontal bone, the entire occipital bone, and the temporal and sphenoid bones were present. A radiotranslucent line separated the bones of each fetal head and probably represents a fibrous form of synostosis. The anterior, middle, and posterior cranial fossae are

within normal limits. There is no evidence of situs inversus, and the remaining portions of the skeletons are all within normal limits.

The twins are joined at about the upper half of the calvarium in such a manner that about 1 cm. of the anterior fontanel is palpable on the forehead of each. An area about 1.5 to 2 cm. of the posterior fontanel, or of the defect between the occipital bones, is palpable in each, the twins being joined forehead to forehead in a symmetrical fashion. There is, however, a tendency to curvature, so that the distance between the auditory canals with reference to the right side of the first twin is 5¾ in. (14.6 cm.), while the difference between the auditory canals with reference to the left side of the first twin is 5 in. (12.7 cm.). There is a soft cephalhematoma in the left occipital region of the first twin. The eyes of both are essential conjugate. Both twins squint when light is flashed, and the pupils of all four eyes react to light. The general tonus of the babies appears essentially normal as to their muscular movements, and the Moro reflex is normal in both. The second twin is slightly smaller and less active, shows somewhat less muscle tonus than the first twin, and does not appear to be as husky. Viewing either twin below the junction, one would not be able to state that they had any definite neurological abnormalities.

The question immediately arises as to the possibility of, first, a definitive treatment that would give more information about the junction area. It is felt that iodopyracet (diodrast®) injection into the sagittal sinus to determine whether this structure is continuous between the twins, as it probably is, would be interesting but rather difficult to accomplish, as the sinus could only be entered at the small anterior fontanel, where at this age it would be quite small. Pneumoencephalograms performed on one of the twins, possibly on both, would be very interesting. The point has been discussed, and it is felt that in general, because of the fact that they are so young, we would prefer to postpone this study until a later time when it would be much easier to perform and less risky. At the end of the first year is considered an appropriate time.

Electrocardiographic Findings in Craniopagus Twins

Electrocardiogram	First Twin	Second Twin
Auricular rate	164	173
Rhythm	Sinus tachycardia	Sinus tachycardia
P waves	Upright	Upright
P-R interval	0.16	0.15
QRS interval	0.04	0.05
QRS complex	Slurring and low potential seen in lead 2	Slurring and low potential seen in lead 2
Precordial and unipolar limb leads	Normal	Normal
T waves	Upright	Upright
S-T segments	R-T elevated 1 mm.	Isoelectric
Axis deviation	Right	Right

The question next arises as to whether it is feasible to separate the twins. It is felt that it is not at the time of this examination. First, at present, there is insufficient scalp available to cover the defects, and skin grafting would seem highly impractical. Second, it is entirely possible that the sagittal sinuses are joined or that there is perhaps one sagittal sinus or one structure comparable to this shared in common by the two, and any attack on such a structure would almost certainly result in a fatality (to be proved true or false by the techniques suggested above). There is very possibly some continuity of brain tissue, although at the present time, owing to the rudimentary function of the nervous system, it is not possible to ascertain this.

SUMMARY

1. A report is given of the birth and present condition of craniopagus twins.

2. The possibility of separating these twins is discussed. This decision must be deferred until further studies are possible.

206 Rock Island Bank Bldg.

FAILURE OF CORTICOTROPIN TO PREVENT ACUTE HEMOLYTIC ANEMIA DUE TO SULFAPYRIDINE

Fred I. Gilbert Jr., M.D.
and
Harry L. Arnold Jr., M.D., Honolulu, T. H.

How sulfapyridine causes acute hemolytic anemia is not known, and the reaction can only be classed as an idiosyncrasy.[1] The beneficial effect of corticotropin (ACTH) on "idiopathic" acquired hemolytic anemia has been described by Dameshek,[2] Gardner,[3] Davidson,[4] and their co-workers. Davidson and associates also noted no significant improvement when corticotropin was given to patients with congenital hemolytic anemia. Simpson and his colleagues [5] reported two cases in which corticotropin appeared to produce some improvement in patients with erythroblastosis fetalis. No account of the effect of corticotropin in acquired hemolytic anemia due to a drug has come to our attention.

REPORT OF A CASE

A 51-year-old Filipino barber consulted one of us (H. L. A.) on May 21, 1951, because of a second attack of severe dermatitis repens of the right foot complicated by infection with an organism of the coli-aerogenes group and by Pseudomonas aeruginosa intertrigo between the toes of both feet, which had recurred after clearing with treatment two months before. After one week of vigorous treatment with topically applied agents, together with chloramphenicol administered orally, so much cellulitis of the right foot had developed that the patient was admitted to the Queen's Hospital for combined corticotropin, terramycin, and sulfapyridine (with sodium bicarbonate) therapy. Corticotropin was given in the hope of abating the severe kerionic-vesicular plantar eruption, terramycin because it was the only antibiotic that produced any appreciable clear zone on the culture plate, and sulfapyridine because of its reputation for usefulness in dermatitis repens, which was felt to be the fundamental disorder. (Dosages of these and subsequent medicaments are indicated in the accompanying chart.)

Improvement in the condition of the patient's skin lesions was disappointingly slow, and it was five days before they had healed sufficiently to permit débridement. Thereafter débridement was carefully performed each day, and improvement was somewhat more rapid. On the seventh hospital day, however, the patient complained of nausea, and the dose of sulfapyridine was halved. On the next day the nausea was unabated, and administration of the drug was discontinued. The patient had had only 1 F (0.56 C) of fever on June 2, 3, and 4, and an elevation to 100 F (37.8 C) on June 5 and 6; the temperature thereafter was normal. Urine examination on May 28 disclosed occasional leukocytes; repeat testings May 31 and June 4 showed nothing abnormal, and tests for urobilinogen and porphyrobilinogen were reported as normal.

On June 4 a recheck of the blood cell count revealed about 8,000 nucleated red blood cells per cubic millimeter, 2 million

From the departments of internal medicine and dermatology of the Straub Clinic.

1. Wintrobe, M.: Clinical Hematology, ed. 2, Philadelphia, Lea & Febiger, 1946, p. 476.

2. Dameshek, W.; Rosenthal, M. C., and Schwartz, L. I.: The Treatment of Acquired Hemolytic Anemia with Adrenocorticotrophic Hormone (ACTH), New England J. Med. **244**: 117, 1951.

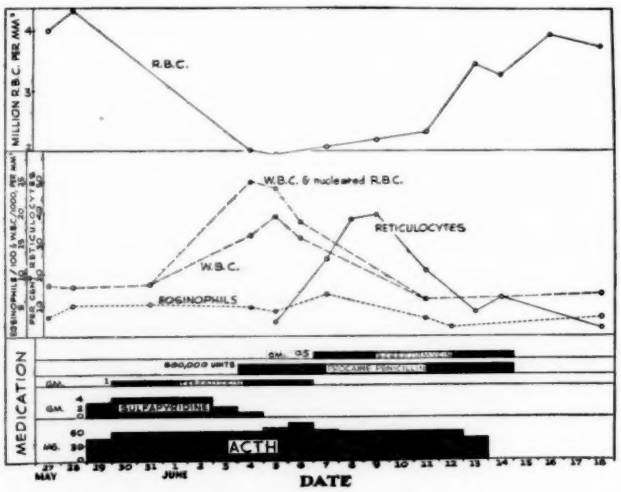
3. Gardner, F.: Blood Club Proceedings: ACTH in Leukemia, Blood **5**: 791, 1950.

4. Davidson, L. S. P.; Duthrie, J. J. R.; Girdwood, R. H., and Sinclair, R. J. G.: Clinical Trials of ACTH in Haemolytic Anaemia, Brit. M. J. **1**: 657, 1951.

5. Simpson, J. W.; Akeroyd, J. H.; Swift, F. L., and Geppert, L. J.: ACTH in the Treatment of Erythroblastosis: Report of 2 Cases, U. S. Armed Forces M. J. **2**: 207, 1951.

red blood cells per cubic millimeter, and hemoglobin of 6 gm. per 100 cc. (determined by Haden-Hausser method, with Wong's iron standardization method). The blood type was group A, Rh positive. No agglutination was noted on typing or cross matching at room temperature. No autoagglutination was observed in blood tests after the anemia had appeared. No jaundice was apparent at any time during the patient's illness; the scleras merely looked slightly muddy. Neither the patient nor the attendants observed any unusual color of the urine during this time. Blood bilirubin on June 6 was 0.67 mg. per 100 cc., 69% of it indirect. Fecal urobilinogen in specimens collected on June 5, 6, and 7 was reported merely as "not increased" above the control; it is not certain that any urobilinogen was present.

Circulating eosinophil chamber counts were done on two occasions. On June 12, four hours after the patient was given a dose of corticotropin, his eosinophil count was 132 per cubic millimeter; on June 18, after corticotropin therapy had been stopped, the count was 286 per cubic millimeter. A Thorn test on June 28 showed an eosinophil drop in four hours from 346 to 148 per cubic millimeter following an injection of 25 mg. of corticotropin. A Kunkel zinc sulfate turbidity test on June 14 showed a reading of 20 (10 above upper limit of normal) units; it was 17 two days later, and 18 on June 20. The thymol flocculation reaction was only 4 on June 14, and 3.6 on June 16.



Graphic representation of course of anemia in the patient in relation to various medicaments employed. Note particularly the patient's prompt recovery on discontinuation of sulfapyridine therapy.

On June 28, following the patient's discharge from the hospital, his red blood cell count was 4,015,000 per cubic millimeter, hemoglobin 12.4 gm. per 100 cc., and white blood cell count 5,500, with a normal differential except for eosinophilia (9%). The packed corpuscular volume, which had been 46% on June 18, was 43%. The Kunkel test was just at the upper limit of normal, and the Coombs' test was normal. The patient's feet at this time, though sensitive, were otherwise normal.

COMMENT

We believe that the diagnosis in this patient of acute hemolytic anemia due to sulfapyridine was justified. The absence of elevated urinary or fecal urobilinogen levels was to be expected as a natural result of destruction of intestinal flora by either the chloramphenicol (chloromycetin®) the patient received before hospitalization or the terramycin he received during hospitalization, or by both.[6] The absence of demonstrable "hemolytic antibodies" (hemagglutinins or hemolysins) and the negative Coombs' test were consistent with the diagnosis. The extremely rapid regeneration of erythrocytes contraindicated a diagnosis of aplastic anemia, as did the speed with which the anemia became established.

The effectiveness of corticotropin in alleviating "idiopathic" acquired hemolytic anemia, and perhaps also the anemia of erythroblastosis, has been attributed to the effect of the hormone in either suppressing antibody formation or preventing antibodies from exerting their tissue effects. The failure of corticotropin to prevent the occurrence of a hemolytic anemia in which these unusual antibodies were not demonstrable would seem to provide some support for either or both of these views.

Although the dose of corticotropin used in treating this patient was not maximal, it seems probable that it was an effective dose, since it did produce demonstrable suppression of the eosinophil count during corticotropin administration, with a rise in count when the hormone was discontinued. At least two workers [7] have found comparable doses to be effective in "idiopathic" acquired hemolytic anemia.

CONCLUSIONS

Corticotropin was not found in our patient to be useful in preventing hemolytic anemia due to sulfapyridine. This observation is consistent with the lack of evidence that such an anemia depends on an antigen antibody mechanism.

1020 Kapiolani St. (Dr. Arnold).

6. Galt, J., and Hunter, R. B.: The Effect of Aureomycin on Certain Liver Function Tests and Blood Coagulation, Am. J. M. Sc. **220**: 508, 1950.

7. Dameshek.[2] Gardner.[3]

AMYLOID TUMOR OF THE URINARY BLADDER

Eugene F. Poutasse, M.D.
and
Edwin R. Fisher, M.D., Cleveland

Four varieties of amyloidosis are recognized. 1. The commonest is the secondary type associated with chronic infectious and tissue-destructive diseases. It shows a predilection for parenchymatous tissue such as the spleen, kidney, and liver, which demonstrate specific tinctorial reactions to Congo red, methylrosaniline chloride (methyl violet, gentian violet), and iodine. 2. The primary type, which tends to involve mesenchymal tissue such as the muscle of the tongue and the heart and demonstrates a variable staining reaction to the methods employed in the secondary form. 3. The amyloid type, associated with multiple myeloma, having the tinctorial and distributional characteristics of the primary type 4. The type in which solitary amyloid deposits occur without known predisposing cause and have a staining reaction similar to the secondary form. These solitary amyloid deposits are most frequently seen in the larynx and tissues of the upper respiratory tract, although reports have been made of their occurrence in the thyroid gland, tongue, eye, and genitourinary tract. Solitary amyloid deposits in the urinary bladder are exceedingly rare. The first description of such a lesion was an autopsy report by Solomin [1] in 1897. There have been only eight addi-

From the Cleveland Clinic and the Frank E. Bunts Educational Institute.

1. Solomin, P.: Ueber locales circumscripted Amyloid in der Harnblasse, Prag. med. Wchnschr. **22**: 3-5, 1897, cited by Craig, L. G.: Amyloid Tumor of the Bladder, J. Urol. **61**: 365-370 (Feb.) 1949.

tional cases mentioned in the literature, another of which was also an autopsy observation.[2]

An instance of solitary amyloid tumor of the urinary bladder has been encountered recently at the Cleveland Clinic Hospital.

REPORT OF A CASE

The patient, a 56-year-old white woman, had always been in good health prior to the onset of intermittent, painless, terminal hematuria six months prior to admission. There were no other urinary complaints, and the patient had no symptoms referable to other systems.

Physical examination revealed a well-nourished woman appearing neither acutely nor chronically ill. Except for a presystolic mitral murmur, considered to be of rheumatic origin, results of the examination were normal. Vaginal examination revealed the base of the urinary bladder to be soft and flexible.

Laboratory studies with the Kahn and Wassermann tests proved to be normal. Hematological examination revealed a hemoglobin count of 12.5 gm. and a white blood cell count of 5,500, with a normal differential. Urinalysis demonstrated that the sediment contained numerous red blood cells (catheterized specimen), a trace of albumin, no reducing substances, and a specific gravity of 1,016. Urine culture was sterile.

Roentgen examination of the chest revealed the bony thorax, heart, and lungs to be normal. A scout film of the abdomen failed to show any abnormalities of the kidneys or psoas muscles. The vertebral and pelvic bones were normal. An intravenous urogram demonstrated normal pelvocalyceal systems and ureters. The dye was promptly excreted from both kidneys. The urinary bladder was normal in size, but there was a slight indentation along the left lateral margin suggestive of a filling defect.

Cystoscopic examination revealed a papillary lesion at the base of the bladder in the region of the left ureteral orifice measuring 3 cm. in diameter (fig. 1). The outer surfaces of the papillary projections were smooth and pinkish-red in color. On the posterior portion of the bladder wall in direct continuity with this lesion was a flat ulcerated area from which blood was slowly oozing. Most of the trigone was involved, and there was edema and injection of the bladder mucosa about the right ureteral orifice. The left ureteral orifice could not be visualized because of the mass at its site.

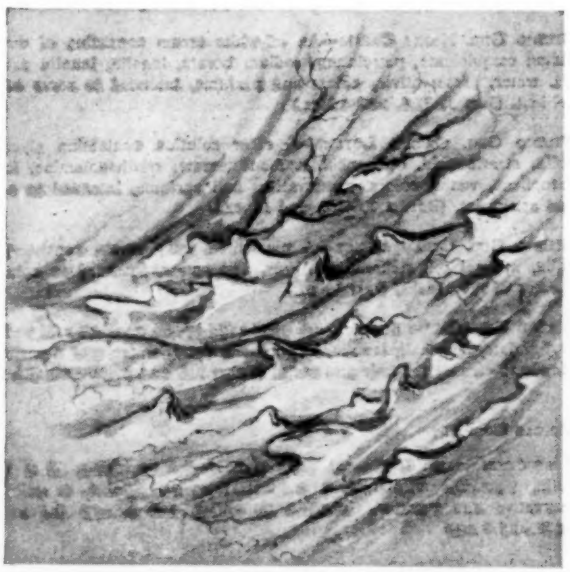


Fig. 1.—Artist's reproduction of lesion as seen through cystoscope.

A biopsy was performed under thiopental (pentothal®) sodium anesthesia. Bleeding persisted for several days. Transurethral resection of the lesion to the muscular layer of the urinary bladder was done. The base was carefully fulgurated. Part of the trigone and the region of the left ureteral orifice had to be removed; however, there was a satisfactory efflux from this orifice after this procedure. The patient was discharged from the hospital one week after surgery without evidence of hematuria.

The patient was free of symptoms when examined six weeks after the operation. Her general condition has remained good. Cystoscopic examination at that time revealed a few frond-like projections on the posterior bladder wall at the periphery of the former lesion, which were covered by smooth vesical epithelium. The remainder of the vesical mucosa in the region of the lesion showed satisfactory repair. Nine months later she is entirely well.

Fig. 2.—Photomicrograph demonstrating deposits of amyloid beneath epithelium (× 100).

PATHOLOGY

Sections (fig. 2) stained with hematoxylin, eosin, and methylene blue after fixation in Zenker's fluid revealed fragments of tissue formed for the most part by broad zones of pink staining hyaline material covered by transitional epithelium. In a few of the fragments this epithelium appeared thicker than is usually found in normal urinary bladder mucosa. The epithelial cells in these fragments, however, were normally oriented and free of mitotic figures. A slight lymphocytic infiltrate was noted in the subepithelial zone of many of the fragments. There was noticeable capillary congestion in all fragments. Several were comprised chiefly of smooth muscle as well as small foci of this pink staining material that surrounded and lay between muscle bundles. Sections stained with methyl violet demonstrated the hyaline material to appear violet, characteristic of amyloid. Vessel walls were negative. The diagnosis was amyloid tumor of urinary bladder and focal epithelial hyperplasia.

COMMENTS

Much has been written concerning the nature of amyloid, but in truth the exact chemical structure and method of its distribution is not known either in its generalized or local forms. There is no apparent explanation for its occurrence in the urinary bladder as a solitary manifestation as observed in this case.

The one characteristic symptom of all reported cases, excluding those observed at autopsy, has been hematuria. Several of the patients have also experienced dysuria and frequency, which may be attributed to secondary infection. Cystoscopic examination has failed to reveal any distinguishing features of this type of lesion, so that diagnosis can be made only after careful histological examination of biopsied specimens.

2. Craig, L. G.: Amyloid Tumor of the Bladder, J. Urol. **61**: 365-370 (Feb.) 1949. Roen, P. R., and Wiener, J.: Primary Amyloid Tumor of the Bladder: Report of a Case, ibid. **66**: 119-121 (July) 1951.

After the diagnosis has been established treatment consists of transurethral resection of the lesion. Resection does not need to be as radical as for malignant disease of the urinary bladder but must be adequate to control the bleeding. Amyloid tumors of the urinary bladder have not been observed to undergo malignant transformation.

The awareness of such a lesion will probably lead to its more frequent recognition. This requires careful histological examination of all biopsied tissue from the urinary bladder.

2020 E. 93rd St. (Dr. Poutasse).

COMMITTEE ON COSMETICS

The following products have been accepted as conforming to the Rules of the Committee on Cosmetics. A copy of the rules on which the Committee bases its action will be sent on application.

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Almay, Incorporated

ALMAY MAKE-READY—A creamy foundation consisting of petrolatum, stearic acid, an alcohol, a sorbitol solution, a monostearate, triethanolamine, covering agents, colors, water, a preservative and perfume, intended to serve as a pigmented make-up base. (Jar: 1.25 oz.)

L.B. Laboratories, Incorporated

L.B. BABY OIL—A clear, colorless, oily solution consisting of seal oil, petrolatum, lanolin, a mixture of isopropyl myristate and palmitate, hexachlorophene and a perfume, intended as a skin emollient. (Bottle: 2 and 6 oz.)

L.B. HAIR OIL—A clear, colorless, oily solution consisting of seal oil, petrolatum, lanolin, a mixture of isopropyl myristate and palmitate, hexachlorophene and a perfume, intended to enhance the natural luster of the hair and to keep it well groomed. (Bottle: 1¼, 2, 6, 8, 16 and 32 oz. and gallon jugs.)

L.B. POMADE—A semi-viscous, yellow white mixture consisting of seal oil, petrolatum and perfume, intended to enhance the natural luster of the hair and to keep it well groomed. (Jar: 2, 5, and 14 oz.)

Luzier's, Incorporated

LUZIER'S LIQUEFYING CLEANSING CREAM—A white cream consisting of petrolatum, a wax, color and perfume, intended to cleanse the oily skin. (Jar: 4 and 8 oz. and 1 lb.)

McKesson and Robbins, Incorporated

ALBOLENE BABY POWDER—A white powder consisting of talc, boric acid powder, a covering agent, petrolatum and perfume, intended to act as a dry lubricant, an anti-abrasive, and to absorb moisture and cool the skin. (Tin Can: 4 oz.)

Revlon Products Corporation

REVLON CUTICLE OIL—A rose colored, oily liquid consisting of an oil, perfume and color, intended to keep the cuticle soft and smooth and to help prevent hangnails. (Bottle: 1 and 4 fl. oz.)

DESTINA CLEANSING CREAM—A yellow white cream consisting of waxes, petrolatum, an absorption base, sodium borate, a preservative, color and perfume, intended to cleanse the skin. (Jar: 3½ and 15 oz.)

DESTINA MASQUE CREAM—An off white cream consisting essentially of water, glycerine, ichthyol, a monostearate, menthol, bentonite, kaolin, zinc oxide, titanium dioxide, preservatives and perfume, intended to refresh the skin. (Jar: 2⅜ and 10½ oz.)

DESTINA NIGHT CREAM—An off white cream consisting of a wax, liquid petrolatum, lanolin sorbitan mono-oleate, an absorption base, a preservative, water and a perfume, intended to serve as a skin emollient. (Jar: $1\frac{11}{16}$ and 15 oz.)

REVLON FASHION PLATE—A pigmented waxy cake consisting of petrolatum, a cholesterol absorption base, waxes, lanolin, covering agents, colors, a preserative and perfume, intended to provide a smooth, tinted finish to the skin. (Compact: ¾ and ⅜ oz.)

REVLON NAIL WHITE PASTE—A thick white cream consisting of petrolatum, a wax, lanolin, covering agents, color and perfume, intended to clean and whiten nail tips. (Jar: 0.8 oz.)

Studio Girl, Hollywood

STUDIO GIRL PERFUME—An amber colored fluid consisting of an alcohol, a fixative and essential oils, intended to add a pleasant scent. (Vial: ½ dram; Bottle: 1 and 2 drams)

WESTERN GENTLEMAN AFTER SHAVE LOTION—A clear green solution containing alcohol, citric acid, water, colors and perfume, intended to serve as an astringent. (Bottle: 4 oz.)

STUDIO GIRL CLEANSING CREAM—An off-white cream consisting of petrolatum, waxes, titanium dioxide and perfume, intended to cleanse the skin. (Jar: 1, 3, 5, and 16 oz.)

STUDIO GIRL COMPLEXION MASQUE—A flesh colored thick cream consisting of bentonite, covering agents, a preservative, colors and a perfume, intended to refresh the skin. (Jar: 1, 3, 5, and 16 oz.)

STUDIO GIRL DAY CREAM—A light pink thick cream consisting of waxes, oils, lanolin, lanolin extractives, sodium borate, sorbitan sesquioleate, water, colors, a preservative and perfume, intended to serve as an emollient. (Jar: 1, 3, 5, and 16 oz.)

STUDIO GIRL FACE POWDER—A pigmented powder consisting of talc, zinc oxide and stearate, titanium dioxide, other covering agents and perfume, intended to enhance the soft, smooth appearance of the skin. (Vial: ½ dram; Jar: ½ oz.; reg. size 2¾ oz.)

STUDIO GIRL FRESHENER—A green colored solution consisting of alcohol, boric acid powder, witch hazel, water, colors and perfume, intended to refresh the skin. (Bottle: 1, 4, 8 and 12 oz.)

STUDIO GIRL LIPSTICK—A smooth waxy solid consisting of waxes, petrolatum, lanolin, castor oil, a stabilizer, colors and a preservative, intended to enhance the color of the lips. (Tube: Reg. and miniature)

STUDIO GIRL NIGHT CREAM—An off-white cream consisting of waxes, sorbitan sesquioleate, petrolatum, sodium borate, lanolin, lanolin extractives, water, preservatives, colors and perfume, intended to serve as an emollient. (Jar: 1, 3, 5, and 16 oz.)

STUDIO GIRL ORCHID LOTION—A clear solution containing glycerin, lanolin, stearic acid, oleic acid, a monostearate, triethanolamine, hexachlorophene, water, colors, preservatives and perfume, intended to serve as an astringent. (Bottle: 1, 4, 8, and 12 oz.)

STUDIO GIRL CREAM ROUGE—A pigmented waxy cream consisting of lanolin, mineral oil, stearoricinol, wax, and colors, intended to enhance the color of the cheeks. (Jar: ⅛ oz.)

STUDIO GIRL CREME SHAMPOO—A semi-solid cream consisting of sodium lauryl sulfate, an alkali, lanolin, stearic acid, color, water, and a perfume, intended to cleanse the hair and scalp. (Tube: 2¼ and 5 oz.; Jar: 7½ oz.)

Walgreen Company

PERFECTION HAND CREAM—A light pink cream consisting of a wax, lanolin, glycerin, petrolatum, a monostearate, an alcohol, a color, a preservative and perfume, intended to soften and protect the hands. (Jar: 3 and 9 oz.)

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AREN MASSAGE LOTION—A white emulsion consisting of lanolin, petrolatum, a vegetable oil, stearic acid, a glycol, an alcohol, magnesium stearate, menthol and perfume, intended to serve as an emollient and as a lubricant to facilitate massage.

This massage lotion is included within the purview of the Committee on Cosmetics because this evaluating group is best equipped to examine products of this type. Aren Massage Lotion is not regarded by this Committee or by the manufacturer as a cosmetic. (Bottle: 8 oz. and 1 gal. containers.)

MEDICAL EDUCATION in the UNITED STATES and CANADA

FIFTY-SECOND ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Donald G. Anderson, M.D., Francis R. Manlove, M.D., and Anne Tipner

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Introduction

This is the 52nd annual report on medical education in the United States and Canada compiled by the Council on Medical Education and Hospitals of the American Medical Association. It covers the period from July 1, 1951, to June 30, 1952. The report presents data and statistics compiled from official sources on medical schools, students, graduates, and other important topics. The Council and THE JOURNAL express their appreciation to the officers of the medical schools, hospitals, and other institutions and agencies whose cordial and valuable cooperation makes possible the annual compilation and presentation of this body of fundamental information, which is consulted by many individuals, organizations, and governmental agencies interested in medical education in the United States and Canada.

In the seven years that have elapsed since the end of World War II, medical education has met and overcome most of the problems engendered by the war and the immediate postwar period. A new emergency, the Korean war, has created new problems, but, for some three years or more now, medical education has been conducted in what may be considered for better or for worse as a normal or peacetime setting. Although international tensions and continuing inflation bar any sense of tranquillity, sufficient stability does prevail to warrant a brief appraisal at this time of the progress of medical education since the war, of its present status, and of the prospects for the immediate future.

Since the end of World War II, the interest of the general public has been focused primarily on two aspects of medical education: the size of the medical student body and the financial problems of the medical schools. The growth of the medical schools, like that of many enterprises, was impeded by the depression and the war. In the early years after the war, concern was occasioned in many quarters by estimates that the nation was faced with a serious shortage of physicians. This concern, coupled with the marked increase in the number of applicants for medical school stemming from the large body of veteran students, constituted strong stimuli for the expansion of the nation's medical schools.

The response has been an unprecedented increase in the nation's facilities for medical education. From an average enrollment of approximately 21,500 students for the five years before World War II, enrollments in the medical schools by the past year had increased to more than 27,000, or an increase of better than 25%. With the 1951-1952 freshman class numbering 7,441, the largest on record, even greater total enrollments will be recorded in the years ahead.

In the period after the war medical schools and medical educators were subjected at times to severe and unfair criticism for not expanding their facilities more rapidly or extensively. It is to the credit of the medical schools that they insisted that, if proper standards were to be maintained, increases in enrollments would have to be accompanied by the provision of additional capital facilities and by additional operating funds. It is equally to the credit of the American public that it was willing to increase its investment in medical education so that additional students could be accommodated without lowering the high standards of medical education that several generations had striven to create in this country. No total figures have been compiled as to the cost of the expansion that has taken place, but it may be estimated that well over 300 million dollars has already been provided for its accomplishment.

This expansion of facilities and the current decrease in the number of applicants to medical schools should result in some easing of the acute pressures that many schools have felt to expand their enrollments. Barring a national disaster such as all-out war or a long depression, however, it may be predicted that, through the establishment of new medical schools and the expansion of existing medical schools, further but probably more gradual increases in the size of the medical student body will be observed.

Medical education is generally considered to be the most expensive type of higher education. It was natural, therefore, that, as the effects of the postwar inflation made themselves felt on educational institutions, the problem of financing the medical schools early became of critical concern. This concern was transmitted to the public at large, with appeals for help taking many forms. These appeals have not gone unheeded. Through increased legislative appropriations, federal grants in aid, gifts for endowment and current expenses, alumni funds, and, more recently, the efforts of the National Fund for Medical Education and the American Medical Education Foundation, the funds available to the medical schools have been more than doubled since the end of World War II. As a result, medical education is better supported today than at any time in its history and American medical schools as a group are conducting programs of education and research that far surpass both qualitatively and quantitatively any of their previous efforts. The schools, however, still face many serious problems with respect to financial support. The relentless progress of inflation creates new crises almost before old ones have been met. Much of the income of the schools is derived from soft money, which cannot be counted on from year to year. Several schools, despite the general increase in available funds, still lack adequate basic budgets. The financing of the medical schools will, therefore, continue to be a cause for major concern, although the problem has been relieved of some of the alarming acuteness that characterized it in the three or four years immediately after the war.

While the public has been occupied with the size of the medical schools and their financial needs, the administrations and faculties of the medical schools have been striving to increase the contributions that the medical schools make to society. The report of the Survey of Medical Education, which will be published early next year, will describe and analyze in detail many of these efforts. A brief listing of important developments in medical education, however, would seem to be appropriate at this time. Efforts by the medical schools to increase their contribution to social progress may be grouped under the following headings:

1. Improvement in the basic education of the undergraduate medical student.
2. Increased efforts to add to the knowledge of medical science through research.
3. Raising the standards of medical care by the examples set in the medical centers of which the medical schools are the dynamic force.
4. Lending their skills and resources to the planning and conduct of community health programs.
5. Increased efforts in the graduate and postgraduate education of physicians.
6. Increased cooperation in the education of personnel in other fields related to medicine.

It is beyond the scope of this report to describe in detail or evaluate the activities of the schools in these fields. Some of the statistics in this report give an indication of the magnitude of certain of these activities, such as the number of other students over and above undergraduate medical students for whom the schools are now accepting responsibility. Likewise, the figures for research grants received by the medical schools give a hint of the extent to which the schools are seeking to increase scientific knowledge. Mention may also be made of the well-known cooperation with Veterans Administration Hospitals and the establishment of affiliations with other hospitals in a region as pertinent, though limited, examples of the increased participation in community health programs by the medical schools in the last seven years.

In its undergraduate program every school has sought to improve its performance so that its graduates will be better prepared to meet the needs of society. Such efforts have featured attempts to bring about better integration of teaching by all departments, directing the student's attention to the whole patient, giving increased emphasis to disciplines and subjects that are becoming of greater importance, such as psychiatry, preventive medicine, and rehabilitation, and introducing the student to a more intelligent understanding of the sociological and economic aspects of medicine.

In summary, medical education has emerged from the war and the postwar period expanded and strengthened and is meeting its responsibilities and attacking its problems with vigor. The prospects, therefore, appear good that, if peace prevails and prosperity endures, the medical schools of America will be making contributions of steadily increasing importance and value to society in the years ahead.

The National Fund for Medical Education and the American Medical Education Foundation

Last year's Educational Number reported the establishment of the National Fund for Medical Education and the American Medical Education Foundation, two closely associated organizations dedicated to raising unrestricted funds annually on a national scale from voluntary sources for the support of the medical schools.

The National Fund, which is sponsored by outstanding leaders in public affairs, business, industry, agriculture, labor, and higher education and by the American Medical Association and the Association of American Medical Colleges, is concentrating on securing contributions from corporations and organized groups. The American Medical Education Foundation, sponsored by the American Medical Association, is designed as an instrument for raising funds from individual physicians and medical organizations. Funds raised by the Foundation are merged with those of the National Fund for distribution by the latter organization to the medical schools.

By January, 1952, these two organizations had raised and distributed to the medical schools a total of $1,594,373. Additional funds raised by both organizations and distributed to the medical schools in August, 1952, brought the total assistance provided from these sources during a period of just over 12 months to $2,820,910. Both organizations expect to have substantial additional funds to distribute to the medical schools by the end of 1952.

Reports from the medical schools make it clear that these grants have already provided important assistance. They have made possible the securing of additional teachers, the retention of other teachers for whom the schools had no other sources of funds to provide urgently needed salary increases, the purchase of teaching equipment, and the rehabilitation or expansion of teaching facilities.

Although the combined annual goal of 5 million dollars that the National Fund and the Foundation have set as their objective has not yet been achieved, the response to the fund-raising efforts of both organizations is steadily gaining momentum. The prospects, therefore, appear bright that the National Fund and the Foundation will be making contributions of increasing value and importance to the solution of the financial problems of the nation's medical schools.

Survey of Medical Education

The field work of the survey of medical education, which is being conducted by the Committee for the Survey of Medical Education under the sponsorship of the Council and the Association of American Medical Colleges, was completed in the spring of 1951. During the past year the director of the survey, Dr. John E. Deitrick, the associate director, Dr. Robert E. Berson, and the committee have been engaged in preparing a report of the study. Arrangements have been completed for publication of the report, which will be issued in book form early in 1953.

The Subcommittee on Preprofessional Education, under the chairmanship of Dr. Aura E. Severinghaus of Columbia University, has completed its field work, which included visits to more than 100 colleges and universities that offer preprofessional education. Dr. Harry J. Carman, dean emeritus of Columbia College, served as the director of this study, with Dr. William E. Cadbury Jr., dean of Haverford College, as associate director. In April, 1952, the subcommittee sponsored a three day conference attended by representatives of the institutions covered in the field work, the Subcommittee on Preprofessional Education, the Survey Committee, and distinguished educators to discuss the findings of the study and to assist in formulating recommendations for the improvement of preprofessional education. A final report incorporating these findings and recommendations is being prepared by the subcommittee and will be published as a separate volume simultaneously with the report of the Committee for the Survey of Medical Education. These two reports represent the most intensive and comprehensive study of medical education and preprofessional education as it applies to medical education that have been conducted in many years. It is expected that the findings and recommendations presented in these reports will be major forces in stimulating and guiding the further development and improvement of medical education and preprofessional education in this country during the next 10 to 20 years.

Medical Education and National Defense

The Korean war and the intensive program to strengthen the nation's defenses continue to be of concern to medical education. Through the Joint Committee on Medical Education in Time of National Emergency, which represents the Council on Medical Education and Hospitals and the Association of American Medical Colleges, close liaison has been maintained between medical education and the armed forces, the Selective Service System, the Public Health Service, the Civil Defense Administration, and other governmental agencies on problems of mutual interest including legislation, personnel policies, and curricular problems. This liaison has made possible a high degree of cooperation between the groups concerned, with the result that the needs of the armed forces for medical personnel are being met so far without seriously impeding the medical schools in fulfilling their basic responsibilities of providing the nation with a continuing supply of well-trained physicians, of conducting extensive basic research, and of providing the highest type of medical care in their affiliated hospitals.

Perhaps the most significant activity of the Joint Committee during the past year has been its cooperation with the Department of Defense, the Public Health Service, and the Civil Defense Administration in developing a program proposed by the governmental agencies to improve the preparation of medical students for future roles as members of the armed forces or as key participants in civil defense. This proposed program, known as "Medical Education for National Defense," will be initiated on an experimental basis in the following five medical schools during the academic year 1952-1953: Buffalo, California, Cornell, Illinois, and Vanderbilt. Each school will appoint from its faculty a man who will serve as coordinator of national defense medicine. It will be the coordinator's responsibility to assist the faculty of his school in devising means whereby those phases of medical science that are of particular importance to military medicine and civil defense can be taught more effectively and their significance made more clear to the student. It is planned that such instruction will be integrated with the school's regular program and that it will not require any major additions to the curriculum in terms of hours or courses. It is believed that the purpose of the program can be accomplished by giving more emphasis to the fundamental principles already taught that are of special importance to military medicine and civil defense and by drawing more examples from the field of military and disaster medicine to illustrate material that is regularly covered in the medical school course. A limited amount of new or special material may be introduced in such areas as chemical warfare and ballistics.

The governmental agencies sponsoring the program are providing funds to support the coordinator and his activities. In addition, they have indicated their willingness to cooperate actively with the schools in making information and teaching materials they have developed available to the schools and in helping to define those problems of military medicine and civil defense that experience has revealed most urgently need attention. One conference for this purpose has already been held, and others are planned.

This latest cooperative undertaking will be watched with great interest by all medical schools. Medical schools as a group believe firmly that modern medical education should not be diverted by efforts to teach details of technique or application from its primary concern with fundamental principles. Some may feel that the present experiment tends in that direction. Others will point out that, regrettable as it may be, experience has shown that most physicians serve at least one tour of duty with the armed forces during their careers and civil defense is a

subject of potential major importance to all physicians. Those who take this view believe that the medical schools are not compromising their educational ideals and philosophies but are better serving their students and the nation if they prepare their students in terms of fundamentals for their responsibilities as medical officers or participants in disaster relief. If this experiment concerns itself with such fundamentals and if it is not expected to emphasize details of technique, it should be well received as a new and appropriate contribution by the medical schools to the nation's welfare.

The coming year will see the return to civilian life of the first large groups of physicians who were called to active military duty after the outbreak of hostilities in Korea. Unless there is an unexpected increase in the size of the armed forces, the number of men released from the armed forces should from now on approximately equal the number of men who will be called to active duty.

The following sections summarize the policies of the Selective Service System and the Department of Defense, in effect at the time this report was prepared, which bear directly on the personnel involved in medical education.

SELECTIVE SERVICE SYSTEM

Responsibility for the primary classification of registrants rests with the Selective Service local boards. If a person or his employer (college, medical school, or hospital) has requested his deferment and he has been classified as available for military service, then the person or his employer may, within 10 days of the mailing of the classification notice, file an appeal. Should the state appeal board sustain the classification, the registrant or his employer may, if there is a dissenting vote in the appeal board, file a written request with the local board to have the decision appealed to the National Selective Service Appeal Board. If there is no dissenting vote, the State or National Director of Selective Service may appeal the case to the President.

The use of SSS Form 103 for the identification of students of the healing arts has been discontinued. The College Student Certificate (SSS Form 109) has been prescribed for the use of institutions of higher learning, including those of medicine, in furnishing to the local boards information regarding registrants who are enrolled as students in those institutions. These forms should be submitted to the local boards by the educational institution on request of the registrant. However, the mere filing of such a form does not constitute a request for occupational deferment since, in order to establish the right of appeal as an interested party, a written request from the college or employer for occupational deferment must accompany the form. The registrant has the right of appeal if exercised in the prescribed 10 days. He can make his appeal informally in writing.

Eligibility for Consideration for Deferment—The law states that the President may provide for the deferment of any person whose deferment is equitable and in the national interest. He also is directed to provide for the annual deferment from training and service of premedical, predental, and allied preprofessional students in numbers equal to those at present in attendance at colleges and universities. The President is also directed to establish a National Advisory Committee to advise the Selective Service System and aid state and local advisory boards in selecting the needed medical, dental, and allied personnel.

The conditions under which students pursuing programs of higher education may be considered for deferment are specified in sections 1622.15 and 1622.25 of the Selective Service regulations. Within the specified requirements, students of the healing arts are to be considered for deferment in the same manner as students pursuing other undergraduate or graduate courses at colleges, universities, etc. Local Board Memorandum No. 7 has, therefore, been rescinded.

Any student not previously deferred who is pursuing a full-time course of study is entitled to a single period of statutory deferment (Class I-S) until the end of the academic year. Such deferment does not preclude the possibility of his later deferment in Class II-S. Students whose activity in study, research or medical, or other endeavors is found necessary to maintenance of the national health, safety, or interest may be deferred in Class II-S until completion of their training, provided they maintain satisfactory scholastic records. A student who is deferred for study becomes liable for military training and service up to his 35th birthday instead of his 26th, as prescribed for registrants who have never enjoyed a deferment.

In selecting a student for deferment in Class II-S the Selective Service local boards may, at their discretion, be guided either by the score made by the student on the College Qualification Test or by his record of academic performance.

The College Qualification Test is given for the Selective Service System by the Educational Testing Service of Princeton, N. J. At present, in order to be eligible for deferment on the basis of this test, an undergraduate student must make a score of 70 or more. SSS Form 108 has been prescribed for furnishing to the local board the score made on the test. This score is confidential and may be divulged by the local board only to the registrant or one holding his written consent.

To qualify for deferment on the basis of academic performance, the nonprofessional student must have maintained the following standing among the male members of his class: freshman year, upper one-half; sophomore year, upper two-thirds; junior year, upper three-fourths.

By Selective Service regulations a student accepted in medical school on or before July 1, 1951, and who is satisfactorily pursuing full-time courses of study may be deferred without consideration of class standing or the Selective Service qualification test if the college certifies him as a full-time student satisfactorily pursuing his courses.

A student accepted for admission to medical school after July 1, 1951, for the class next commencing may be deferred provided that during his last full-time year at a college or university he was ranked in the upper one-half of the male members of his class or had a score of 70 or more on the qualification test. A student admitted to a graduate school before July 1, 1951, who is pursuing a full-time course of study may be deferred provided he is meeting degree requirements. A student accepted for admission by a graduate school after July 1, 1951, as a full-time student for the class next commencing may be deferred provided in his last full-time academic year in a

college or university he achieves a scholastic standing among the upper one-half of the male members of his class or scored 75 or more on the qualification test, and provided the graduate school certifies that he is meeting the degree requirements.

Operations Bulletin No. 60 (SSS), which provided for deferment only of Rhodes Scholars and Fulbright Exchange Scholars, has been amended. Decisions concerning deferment of American students enrolled in foreign universities, including medical students, are the responsibility of the local boards. The local boards may accept or reject any claims or evidence presented for deferment.

In October 1950, Public Law 779, which provides for the registration, classification, and induction of certain medical, dental, and allied specialists, became effective. All medical, dental and allied specialists who had not yet reached the age of 50 at the time of registration were required to register and thereby became available for military service. All new medical graduates under 50 years of age must register with their local boards, as physicians, within five days of receipt of the degree. When the degree is not granted until the completion of an internship, registration is accordingly deferred. Registrants are divided into four categories signifying the order of induction. In the first priority are those who participated in the ASTP or V-12 programs or have been deferred by the Selective Service System after Dec. 7, 1941, and prior to March 31, 1947, for the purpose of pursuing a course of instruction in their professions, and who had less than 90 days of active service with the armed forces or Public Health Service subsequent to the completion of, or release from, the educational program. (Postgraduate training including internship or residency while on active duty excluded.) In priority 2 are registered those who had participated in these educational programs but had had 90 days or more but not 21 months of service subsequent to the completion of, or release from, the educational program. In priority 3 are registered those who had had no service at all since Sept. 16, 1940. In priority 4 are registered those who do not come in priorities 1 or 2 and who had service after Sept. 16, 1940, with all active service counting. The act provided that such special registrants are to be selected for induction first from those registered in priority 1 and that each priority in turn will be exhausted of available men before the next priority can be used.

Men in priorities 1 and 2 were required to register on Oct. 16, 1950; those in priorities 3 and 4 on Jan. 15, 1951. Through the summer of 1952, orders for inductions of doctors of medicine had been limited to priority 1. However, it is anticipated that by November of the present year it will be necessary to begin the induction of physicians in priority 2.

Interns and Residents.—The Selective Service System has always recommended the deferment of graduates of medicine to complete one year of internship training. No statement of policy has been issued by the national headquarters of the Selective Service System with respect to residents or second year interns.

The National Advisory Committee to the Selective Service System has indicated that all physicians in priorities 1 and 2 will be needed by the armed forces and has advised that they apply for commissions about the time of completion of their internships. A few persons in these categories may be recommended for deferment by the Selective Service local boards for teaching, research, or public health service or because they are rendering essential service in isolated communities and cannot be replaced.

In addition, the only persons in this group who can justifiably be recommended for deferment are those who are accepted for training in the scarcity specialties and whose services are required to meet essential needs of medical and dental schools or hospital services. The specialties in which critical shortages exist are anesthesiology, physical medicine and rehabilitation, psychiatry, radiology, neurology, pathology, public health, orthopedic surgery, oral surgery, and the basic medical sciences. Those few persons in these groups for whom deferment is necessary may be put in class II-A by the Selective Service local board on recommendation of the advisory groups.

Faculty Members.—A majority of the faculty members of medical schools are under age 50 and, therefore, are required to register with the Selective Service System as required under Public Law 779. No policy has been announced by Selective Service on the granting of deferment to faculty members. However, the National Advisory Committee has recommended that, as a general policy, essential members of medical, dental, and veterinary medical faculties be held in their teaching positions rather than be released for military service. This recommendation applies especially to men in the basic science departments and includes persons in priorities 1 and 2. This policy is not a blanket recommendation for deferment from military service for all teachers. Part-time teachers who devote only a small part of their time to teaching, and certain of the younger, full-time teachers in priorities 1 and 2 will be expected to enter the military services.

ARMED FORCES

At the present time a considerable number of premedical students, medical students, interns, residents, and faculty are members of the reserve forces of the Army, Navy, Air Force, and Marine Corps or of National Guard units. Among premedical and medical students, a large number are enrolled as reserves in branches other than the medical departments. On Aug. 1, 1950, the Secretary of Defense announced a policy on delay in call to active duty for members of all civilian components of the armed forces possessing critical occupational skills. This statement called attention to the fact that it is a basic function of the civilian components of the armed forces to be available for military service in time of emergency in keeping with the traditional policy of our nation to have a relatively small military force in being, supported by reserves and the National Guard. It is recognized, however, that in an emergency the national interest may dictate that the ordering to active duty of some reservists be delayed temporarily. The statement goes on to establish the basic criteria on which requests for delay in call to active duty will be considered and evaluated. Under these criteria, provision is made for delays in call-up of premedical students who have been definitely accepted for admission to medical schools,

medical students, interns, and essential residents and faculty members who are in the reserves. The statement makes clear that delays in call to active duty will be made only on an individual basis and that they shall not be considered as a means of exempting persons indefinitely from military service.

Each of the military departments is responsible for implementing these policies with respect to its own reserves and is issuing its own regulations. These regulations are being reported from time to time in THE JOURNAL. All the services have emphasized that requests for delay in call-up should not be submitted until orders to report for active duty have actually been received. While each of the military departments has established an appeal board at the secretarial level that will reconsider individual cases in which the individual or his employer has additional facts or adequate reason to believe than an error was made by the first board, it is emphasized that unless delay in call-up orders are received prior to the reporting date, the person concerned must comply with his original orders.

The Department of Defense announced in December, 1950, that before a medical or dental reserve officer is called to active duty his name is to be sent to the Department of Defense, which will request advice from the Armed Forces Medical Policy Council, Office of the Secretary of Defense, the Health Resources Advisory Committee of the Office of Defense Mobilization, and the Advisory Committees to the Selective Service System. The military departments will be guided by the information thus obtained in issuing orders for call to active duty. This policy does not apply to organized reservists who have certified their availability for immediate call to duty. When a person or his employer believes he should not be called to duty the case may be appealed to the Secretary of Defense.

G. I. Bill of 1952

Educational subsidies for veterans are provided by a new "GI bill," passed by Congress on July 4, 1952. The Veterans' Readjustment Assistance Act of 1952 (Public Law 550, 2nd Session, 82nd Congress) offers vocational readjustment and restoration of lost educational opportunities for men and women whose educational or vocational programs have been interrupted by call to active duty with the armed forces during a national emergency. The act, which became effective Aug. 20, 1952, covers a "basic service period" beginning June 27, 1950, and ending on such date as shall be determined by Presidential proclamation or concurrent resolution of Congress.

Eligibility and Entitlement.—Any veteran is eligible for educational benefits under this bill who has had 90 days or more of active service, during the "basic service period," either in the United States or abroad, provided that his discharge or release from service was other than dishonorable. The program of education or training must be initiated before Aug. 20, 1954, or within two years of separation from service, whichever is later; entitlement for benefits terminates seven years after separation from service or the end of the basic service period, whichever is earlier.

Duration of Education or Training Offered.—The veteran is granted one and one-half days of education or training for each day of active service. The maximum benefit allowed, 36 months, will permit completion of the regular four year college course; however, veterans of World War II who have been recalled to duty are entitled to a total of 48 months. Where the period of entitlement ends in midterm (quarter or semester) the student is permitted to finish that term.

In general, it is required that the program be pursued continuously except for such vacations as the institution customarily provides. The program may be suspended, however, for not more than 12 consecutive months and may be suspended for even longer periods if the Veterans' Administrator finds such interruption necessary because of conditions beyond the veteran's control.

Educational Programs and Institutions.—The veteran may select a program of education or training at any "approved" institution of his choice that finds him qualified for such training and that will accept him as a student; however, he must select a definite educational or vocational goal, and he is required to select a program that leads definitely toward that objective. Before he can enroll he must apply to the Veterans Administration for a certificate of eligibility and for approval of the program. One change of program is permitted, subject to approval by the Administrator.

Educational institutions in the United States or in foreign countries, to be eligible under the bill, must be approved by an approving agency or department established by the state or, if such an agency is not established, by an approving authority established under the Administrator of Veterans' Affairs. The Administrator is required to use the services of the Office of Education in aiding and advising the agencies responsible for the approval of courses. The Commissioner of Education is required to publish, for the use of state approving agencies, a list of nationally recognized accrediting agencies and associations that he determines to be reliable authorities as to the quality of instruction offered by educational institutions. In addition, the Administrator is required to establish an advisory committee to the Veterans' Administration composed of persons eminent in their respective fields of education, labor, and management, and of persons representing the various types of establishments that furnish education and training to veterans.

Definition, in the bill, of an "educational institution" includes colleges, universities, professional schools, "or other institutions furnishing education for adults." The school and/or course must have been in operation for at least two years in order to qualify except for courses offered by public or other tax-supported institutions or for a course offered by an educational institution that has been in operation for more than two years, provided such course is similar in character to the instruction previously given by the institution.

A program of education and training includes any curriculum or unit thereof that is generally accepted as necessary to the fulfillment of the educational objective. A course is defined as "an organized unit of subject matter in which instruction is offered within a given period of time or which covers a specific amount of related sub-

ject matter for which credit toward graduation or certification is usually given." A full-time undergraduate college course is defined as 14 semester hours of work or equivalent.

Finances: All subsidies are paid monthly directly to the veteran within 20 days of certification of the veteran's student status by the educational institution. It is the veteran's responsibility to make payments to the educational institution. Tax-supported, public educational institutions that have no established charges for tuition and fees may charge the eligible veteran up to $10.00 a month for a full-time course. An income ceiling of $310 is imposed for veterans pursuing apprentice or other "on the job" training but not on veterans enrolled in other types of programs. The following schedules of allowances have been established.

1. Full-time student with no dependents, $110 per month
   Full-time student with 1 dependent, $135 per month
   Full-time student with more than 1 dependent, $160 per month
2. *Institutional plus On-the-Job Programs.*
   $ 90 a month with no dependents
   $110 a month with one dependent
   $130 a month with more than one dependent
3. *Apprentice or Other Training on the Job.*
   $ 70 a month with no dependents
   $ 85 a month with one dependent
   $105 a month with more than one dependent

Educational institutions will be paid $1.50 a month per veteran to defray the cost of making reports and certifications to the Administrator.

Approved Medical Schools

The 72 medical schools in the United States that are approved by the Council on Medical Education and Hospitals are listed in table 1; the 10 approved Canadian schools are named in table 2. The eight approved schools of the basic medical sciences in the United States and Canada are listed in table 3. There has been no change in these lists since the publication of the 1951 Educational Number.

These tables give the number of years of premedical training that each school will require of freshmen entering in 1953. They also list the number of students enrolled in each class for the academic year 1951-1952, the number of students enrolled in internships that are a part of the degree requirement, and the number of students graduated by each school from July 1, 1951, to June 30, 1952.

For the Canadian schools enrollments are given for premedical students, students enrolled in a fifth medical year, and those in a required intern year.

The name of the dean or executive officer appears opposite the name of each school. Changes in the chief executive officers have been made by 10 of the 90 medical and basic science schools of the United States and Canada since publication of the 1951 Educational Number. New executive officers have been appointed by Yale, Kansas, Nebraska, Southwestern, South Dakota, St. Louis, Missouri, Vermont, Meharry, and Saskatchewan.

Medical School Calendars

Conventional schedules were followed during the 1951-1952 academic year by most schools, with students entering in September or October and graduating in May or June. Schedules for the freshman class will be the same in all schools for 1952 as for 1951.

At Kansas, where the freshman year consists of two semesters and a summer session, with vacations and periods of instruction staggered, half the freshmen began their studies in June and half in September. The University of Tennessee admitted students each quarter and graduated a class each quarter. At Duke University and the University of Chicago, although students are admitted once a year, they may elect to accelerate their programs and thereby graduate in a minimum of approximately three and one quarter years.

The University of Utah, which had been on an accelerated program, returned to a conventional schedule for the class entering in September, 1951. Students in the upper three classes will complete their medical courses on an accelerated schedule. Mississippi continued to admit a class in July and one in January, and thus has two classes enrolled in each year. Canadian medical schools followed regular schedules during the past year and will continue to do so in the coming year.

Length of the Academic Year

The average length of the academic year in the medical schools and schools of the basic medical sciences in the United States is gradually being increased with a resulting increase in the average length of the total medical school course. Since statistics on this subject were last compiled, in 1948, the average length of each academic year has increased by one week. The total medical course, excluding a required year of internship, now averages 143 weeks compared to 139 weeks in 1948 and 136 weeks in 1940.

There is considerable variation from school to school in the length of the academic year. In one school the length of all four academic years, exclusive of vacations, is 30 weeks, and in another school it is 31 weeks. No other schools have academic years of less than 32 weeks. For the first year the range is from 30 to 44 weeks, with an average of 35 weeks; for the second year 30 to 46 weeks, with an average of 35 weeks; for the third year 30 to 50 weeks, with an average of 36 weeks, and for the fourth year 30 to 50 weeks, with an average of 37 weeks.

Enrollments

Enrollment records were broken for the fourth consecutive year both for numbers of students admitted and for total number of students enrolled in approved medical schools in the United States. Total enrollment in the 72 medical and seven basic science schools during 1951-1952 was 27,076 as compared to 26,191 in the preceding year. This represents an increase of 885, or 3.4%. The freshman class totalling 7,441, is larger by 259, or 3.6%, than last year's record-breaking class. Enrollment figures for each school are given in tables 1 and 3. Total enrollments for all approved medical and basic science schools in the United States and Canada are recapitulated in table 4.

TABLE 1.—*Approved Medical Schools in the United States*

	Name and Location of School	1953 Premedical Requirement by Years	Students by Classes, 1951-1952						Graduates July 1, 1951 to June 30, 1952	Executive Officer	
			Freshman	Sophomore	Junior	Senior	Required Intern Year	Totals			
	ALABAMA										
1	Medical College of Alabama, Birmingham	3	80	53	55	49	..	237	49	James J. Durrett, M.D., Dean	1
	ARKANSAS										
2	University of Arkansas School of Medicine, Little Rock	3	90	79	80	78	..	327	78	Hayden C. Nicholson, M.D., Dean	2
	CALIFORNIA										
3	College of Medical Evangelists, Loma Linda-Los Angeles	3	97	93	94	100	80	384	80	Walter E. Macpherson, M.D., President, Los Angeles; Harold Shryock, M.D., Dean, Loma Linda	3
4	University of Southern California School of Medicine, Los Angeles	3	69	69	71	67	66	276	66	Burrell O. Raulston, M.D., Dean	4
5	Stanford University School of Medicine, Stanford University-San Francisco	3	62	60	62	62	56	246	54	Loren R. Chandler, M.D., Dean	5
6	University of California School of Medicine, San Francisco	3	72	72	73	65	..	282	65	Francis Scott Smyth, M.D., Dean	6
	COLORADO										
7	University of Colorado School of Medicine, Denver	3	81	82	76	74	..	313	74	Robert C. Lewis, Ph.D., Dean	7
	CONNECTICUT										
8	Yale University School of Medicine, New Haven	3	80	70	62	71	..	283	66	Vernon W. Lippard, M.D., Dean	8
	DISTRICT OF COLUMBIA										
9	Georgetown University School of Medicine, Washington	Degree*	125	111	100	99	..	435	95	Rev. Paul A. McNally, S.J., Ph.D., Dean	9
10	George Washington University School of Medicine, Washington	3	90	83	93	86	..	352	86	Walter A. Bloedorn, M.D., Dean	10
11	Howard University College of Medicine, Washington	4	81	71	69	74	..	295	74	Joseph L. Johnson, M.D., Dean	11
	GEORGIA										
12	Emory University School of Medicine, Atlanta (Emory University)	3	73	70	74	68	..	285	68	Richard Hugh Wood, M.D., Dean	12
13	Medical College of Georgia, Augusta	3	79	77	79	77	..	312	76	G. Lombard Kelly, M.D., President	13
	ILLINOIS										
14	Chicago Medical School	Degree	73	70	69	65	63	277	51	John J. Sheinin, M.D., President; F. J. Mullin, Ph.D., Dean of Faculty	14
15	Northwestern University Medical School, Chicago	3	128	125	134	136	..	523	139	Richard H. Young, M.D., Dean	15
16	Stritch School of Medicine of Loyola University, Chicago	3	93	83	80	87	..	343	88	John F. Sheehan, M.D., Dean	16
17	University of Chicago, The School of Medicine	3	72	72	66	62	..	272	62	Lowell T. Coggeshall, M.D., Dean, Division of Biological Sciences; Joseph J. Ceithaml, Ph.D., Dean of Students	17
18	University of Illinois College of Medicine, Chicago	3	167	160	175	169	..	671	169	Stanley W. Olson, M.D., Dean	18
	INDIANA										
19	Indiana University School of Medicine, Bloomington-Indianapolis	3	152	147	141	137	..	577	137	John D. VanNuys, M.D., Dean, Indianapolis	19
	IOWA										
20	State University of Iowa College of Medicine, Iowa City	3	120	113	105	80	..	418	80	Willis M. Fowler, M.D., Chairman, Executive Committee	20
	KANSAS										
21	University of Kansas School of Medicine, Lawrence-Kansas City	3	122	104	104	82	..	412	82	W. Clarke Wescoe, M.D., Dean	21
	KENTUCKY										
22	University of Louisville School of Medicine, Louisville	3	100	90	101	95	..	386	94	J. Murray Kinsman, M.D., Dean	22
	LOUISIANA										
23	Louisiana State University School of Medicine, New Orleans	3	127	108	105	98	..	438	98	William W. Frye, M.D., Dean	23
24	Tulane University of Louisiana School of Medicine, New Orleans	3	130	119	130	132	..	511	132	M. E. Lapham, M.D., Dean	24
	MARYLAND										
25	Johns Hopkins University School of Medicine, Baltimore	Degree	75	70	76	78	..	299	79	Alan M. Chesney, M.D., Dean	25
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	3	104	95	94	97	..	390	97	H. Boyd Wylie, M.D., Dean	26
	MASSACHUSETTS										
27	Boston University School of Medicine, Boston	3	72	68	71	70	..	281	68	James M. Faulkner, M.D., Dean	27
28	Harvard Medical School, Boston	3	114	111	151	140	..	516	142	George Packer Berry, M.D., Dean	28
29	Tufts College Medical School, Boston	Degree	120	111	100	98	..	429	98	Dwight O'Hara, M.D., Dean	29
	MICHIGAN										
30	University of Michigan Medical School, Ann Arbor	3	204	150	136	125	..	615	126	A. C. Furstenberg, M.D., Dean	30
31	Wayne University College of Medicine, Detroit	3	75	72	59	66	..	272	62	Gordon H. Scott, Ph.D., Dean	31
	MINNESOTA										
32	University of Minnesota Medical School, Minneapolis	3	127	132	123	117	114	499	109	Harold S. Diehl, M.D., Dean of Medical Sciences	32

	MISSOURI										
33	**St. Louis University School of Medicine, St. Louis**	3	125	130	123	117	..	495	115	Rev. Edward T. Foote, S.J., Regent	33
34	**Washington University School of Medicine, St. Louis**	3	87	89	97	99	..	372	99	Robert A. Moore, M.D., Dean	34
	NEBRASKA										
35	**Creighton University School of Medicine, Omaha**	3	77	71	78	69	..	295	68	F. G. Gillick, M.D., Dean	35
36	**University of Nebraska College of Medicine, Omaha**	3	86	85	88	83	..	342	84	James P. Tollman, M.D., Dean	36
	NEW YORK										
37	**Albany Medical College, Albany**	3	58	52	52	47	..	209	47	James Allan Campbell, M.D., Dean	37
38	**State University of New York College of Medicine at New York City, Brooklyn**	3	151	143	140	103	..	537	103	Jean A. Curran, M.D., Dean	38
39	**University of Buffalo School of Medicine, Buffalo**	4	75	71	60	64	..	270	64	Stockton Kimball, M.D., Dean	39
40	**Columbia University College of Physicians and Surgeons, New York**	3	120	116	116	106	..	458	105	Willard C. Rappleye, M.D., Dean	40
41	**Cornell University Medical College, New York**	3 and Degree	85	77	85	82	..	329	80	Joseph C. Hinsey, Ph.D., Dean	41
42	**New York Medical College, Flower and Fifth Avenue Hospitals, New York**	Degree	129	126	121	110	..	486	109	J. A. W. Hetrick, M.D., President and Dean	42
43	**New York University College of Medicine, New York**	3	139	126	131	114	..	510	114	Currier McEwen, M.D., Dean	43
44	**University of Rochester School of Medicine and Dentistry**	3	71	69	69	70	..	279	70	George H. Whipple, M.D., Dean	44
45	**State University of New York at Syracuse College of Medicine, Syracuse**	3	76	72	62	44	..	254	44	William R. Willard, M.D., Dean	45
	NORTH CAROLINA										
46	**Duke University School of Medicine, Durham**	3	79	78	80	84	..	321	74	Wilburt C. Davison, M.D., Dean	46
47	**Bowman Gray School of Medicine of Wake Forest College, Winston-Salem**	3	56	53	52	59	..	220	58	C. C. Carpenter, M.D., Dean	47
	OHIO										
48	**University of Cincinnati College of Medicine, Cincinnati**	3	90	90	88	87	..	355	87	Stanley Dorst, M.D., Dean	48
49	**Western Reserve University School of Medicine, Cleveland**	3	82	77	81	84	..	324	84	Joseph T. Wearn, M.D., Dean	49
50	**Ohio State University College of Medicine, Columbus**	3	149	140	85	84	..	458	83	Charles A. Doan, M.D., Dean	50
	OKLAHOMA										
51	**University of Oklahoma School of Medicine, Oklahoma City**	3	101	83	78	54	..	316	54	Mark R. Everett, Ph.D., Dean	51
	OREGON										
52	**University of Oregon Medical School, Portland**	3	83	66	74	71	..	294	69	D. W. E. Baird, M.D., Dean	52
	PENNSYLVANIA										
53	**Hahnemann Medical College and Hospital of Philadelphia**	3	105	98	84	77	..	364	77	Charles L. Brown, M.D., Dean	53
54	**Jefferson Medical College of Philadelphia**	3	170	159	162	160	..	651	160	George Allen Bennett, M.D., Dean	54
55	**Temple University School of Medicine, Philadelphia**	3	135	129	121	129	..	514	128	William N. Parkinson, M.D., Dean	55
56	**University of Pennsylvania School of Medicine, Philadelphia**	3	135	125	128	125	..	513	126	John McK. Mitchell, M.D., Dean	56
57	**Woman's Medical College of Pennsylvania, Philadelphia**	4	50	47	46	44	..	187	43	Marion Fay, Ph.D., Dean	57
58	**University of Pittsburgh School of Medicine, Pittsburgh**	3	100	97	98	92	..	387	91	William S. McEllroy, M.D., Dean	58
	SOUTH CAROLINA										
59	**Medical College of South Carolina, Charleston**	3	70	56	57	57	..	240	57	Kenneth Lynch, M.D., President; John T. Cuttino, M.D., Dean	59
	TENNESSEE										
60	**University of Tennessee College of Medicine, Memphis**	3†	196	149	156	151	..	652	150	O. W. Hyman, Ph.D., Dean	60
61	**Meharry Medical College, Nashville**	3	65	68	62	62	..	257	62	Harold D. West, Ph.D., President; Daniel T. Rolfe, M.D., Dean	61
62	**Vanderbilt University School of Medicine, Nashville**	3 and Degree	53	52	51	51	..	207	51	John B. Youmans, M.D., Dean	62
	TEXAS										
63	**Southwestern Medical School of the University of Texas, Dallas**	3	105	96	102	72	..	375	72	George N. Aagaard, M.D., Dean	63
64	**University of Texas School of Medicine, Galveston**	Degree	174	140	140	89	..	543	89	Chauncey D. Leake, Ph.D., Vice-Pres.; D. Bailey Calvin, Ph.D., Dean of Students and Curricular Affairs	64
65	**Baylor University College of Medicine, Houston**	3	94	87	89	85	..	355	83	W. H. Moursund, M.D., Dean	65
	UTAH										
66	**University of Utah College of Medicine, Salt Lake City**	3	55	51	50	49	..	205	21	John Z. Bowers, M.D., Dean	66
	VERMONT										
67	**University of Vermont College of Medicine, Burlington**	3	51	44	46	38	..	179	38	George A. Wolf, M.D., Dean	67
	VIRGINIA										
68	**University of Virginia Department of Medicine, Charlottesville**	3	72	68	74	72	..	286	72	Vernon W. Lippard, M.D., Dean	68
69	**Medical College of Virginia, Richmond**	3	84	78	101	102	..	365	102	John B. Truslow, M.D., Dean	69
	WASHINGTON										
70	**University of Washington School of Medicine, Seattle**	3	75	67	75	43	..	260	43	Edward L. Turner, M.D., Dean	70
	WISCONSIN										
71	**University of Wisconsin Medical School, Madison**	3	87	76	76	72	..	311	70	William S. Middleton, M.D., Dean	71
72	**Marquette University School of Medicine, Milwaukee**	3	104	99	91	90	..	384	90	John S. Hirschboeck, M.D., Dean	72
	Totals		7,153	6,590	6,577	6,195	379	26,515	6,080		

* Ninety semester hours for veterans.
† Beginning September 1953.
‡ Intern enrollment not included in total column.

Total enrollment in the 10 medical and one basic science school of Canada was 3,458, representing a decrease of 31, or 1.2%, since last year. These schools also had 473 students enrolled in two premedical years and 50 in a fifth (not intern) year. These premedical and fifth year students are included in the "total" column of table 2 but are not included in table 4.

There were 720 students in the United States and Canada who were enrolled in internships that were a part of the degree requirement of the medical schools at which they were educated. The total of students enrolled in such required internships in the United States for each academic year since 1930-1931 is shown in table 5.

Total enrollments for the various classes in the medical and basic science schools of the United States are shown for each academic session since 1930-1931, in table 6. For the years prior to 1942-1943, the totals given in table 6 are somewhat higher than the sum of the figures for the various classes in a given year. This discrepancy resulted from the inability of certain schools in the earlier years to classify their students strictly into conventionally graded classes.

In table 7 the 72 medical schools of the United States are arranged according to the size of their student bodies. Enrollments ranged from 179 to 671. The median enrollment was 343 and the average 368.

TABLE 2.—*Approved Medical Schools in Canada*

	Name and Location of School	1953 Premedical Requirement by Years	Students by Classes—1951-1952: First Premedical Year	Second Premedical Year	Freshman	Sophomore	Junior	Senior	Additional Year	Required Intern Year*	Totals	Graduates, July 1951 to June 30, 1952	Executive Officer	
	ALBERTA													
1	University of Alberta Faculty of Medicine, Edmonton	3	...	...	58	54	56	54	..	..	222	53	John W. Scott, Dean	1
	MANITOBA													
2	University of Manitoba Faculty of Medicine, Winnipeg	3	...	...	70	73	61	68	..	87	272	83	Lennox G. Bell, M.D., Dean	2
	NOVA SCOTIA													
3	Dalhousie University Faculty of Medicine, Halifax	2	...	...	59	51	54	56	..	53	220	53	H. G. Grant, M.D., Dean	3
	ONTARIO													
4	Queen's University Faculty of Medicine, Kingston	2**	64	...	62	61	58	57	50	..	352	50	G. Harold Ettinger, M.D., Dean	4
5	University of Ottawa Faculty of Medicine, Ottawa	2**	38	...	60	53	47	48	..	47	246	44	A. L. Richard, M.D., Dean	5
6	University of Western Ontario Faculty of Medicine, London	3	...	...	60	59	59	62	..	..	240	60	J. B. Collip, M.D., Dean	6
7	University of Toronto Faculty of Medicine, Toronto	2**	124	144	155	152	169	174	..	..	918	175	J. A. McFarlane, M.B., Dean	7
	QUEBEC													
8	McGill University Faculty of Medicine, Montreal	3	...	...	116	105	119	113	..	..	453	115	G. Lyman Duff, M.D., Dean	8
9	University of Montreal Faculty of Medicine, Montreal	Degree	...	...	117	101	96	93	..	87	407	83	Wilbrod Bonin, M.D., Dean	9
10	Laval University Faculty of Medicine, Quebec	Degree	103	...	84	150	139	111	..	67	587	67	Charles Vezina, M.D., Dean	10
	Totals	.....	329	144	841	859	858	836	50	341	3,917	783		

* Intern enrolment not included in total column. ** Grade XIII Honor Matriculation.

TABLE 3.—*Approved Schools of the Basic Medical Sciences in the United States and Canada*

	Name and Location of School	1953 Premedical Requirement by Years	Students by Classes, 1951-1952: Freshman	Sophomore	Total	Executive Officer	
	UNITED STATES						
	MISSISSIPPI						
1	University of Mississippi School of Medicine, University	3	31 28	29 29	60 57	David S. Pankratz, M.D., Dean	1
	MISSOURI						
2	University of Missouri School of Medicine, Columbia	3	45	36	81	M. Pinson Neal, M.D., Acting Dean	2
	NEW HAMPSHIRE						
3	Dartmouth Medical School, Hanover	3	24	24	48	Rolf C. Syvertsen, M.D., Dean	3
	NORTH CAROLINA						
4	University of North Carolina School of Medicine, Chapel Hill	3	58	55	113	W. Reece Berryhill, M.D., Dean	4
	NORTH DAKOTA						
5	University of North Dakota School of Medicine, Grand Forks	3	39	36	75	W. F. Potter, M.D., Dean	5
	SOUTH DAKOTA						
6	University of South Dakota School of Medical Sciences, Vermillion	3	32	34	66	W. L. Hard, Ph.D., Dean	6
	WEST VIRGINIA						
7	West Virginia University School of Medicine, Morgantown	3	31	30	61	Edward J. Van Liere, M.D., Dean	7
	Totals	..	288	273	561		
	CANADA						
	SASKATCHEWAN						
8	University of Saskatchewan School of Medical Sciences, Saskatoon	2	32	32	64	J. Wendell Macleod, M.D., Dean	8
	Totals	..	320	305	625		

Graduates

The 6,080 students graduated from medical schools in the United States during the past academic year are the largest number ever graduated from these schools while on regular schedules. This total was surpassed only in 1947 when at the termination of the wartime accelerated program several schools graduated more than one class and in 1951 when one school graduated an extra class. Tables 1 and 2 show, respectively, the number of students graduated from each approved medical school in the United States and Canada.

The total number of Class A and approved medical schools, together with the total numbers of their students and graduates for each year since 1910 is shown in table 8. Statistics for Class B and C schools are shown, for the years 1910-1929, in table 9. The A, B, C classification of medical schools, inaugurated by the Council in 1910, was discontinued in 1929. Since 1929 the schools have been classed as "approved," which is equivalent to the former Class A, or as "unapproved." This fact should be borne in mind by those who desire to make comparative studies on the production of physicians at different periods.

TABLE 4.—*Enrolments by Classes in Medical Schools of the United States and Canada, 1951-1952*

Students in the required intern year are not included.

	Number of Schools	Freshman	Sophomore	Junior	Senior	Total	Total Preceding Session
United States							
Medical Schools	72	7,153	6,590	6,577	6,195	26,515	25,633
Basic Science Schools	7	288	273	.....	.....	561	558
Totals	79	7,441	6,863	6,577	6,195	27,076	26,191
Canada							
Medical Schools	10	841	859	858	836	3,394*	3,427†
Basic Science School	1	32	32	.....	.....	64	62
Totals	11	873	891	858	836	3,458*	3,489†
Totals	90	8,314	7,754	7,435	7,031	30,534	29,680

* Does not include 473 premedical and 50 fifth year students.
† Does not include 395 premedical and 194 fifth year students.

The schools with the largest number of graduates during the past academic year were: Illinois 169, Jefferson 160, Tennessee 150, Harvard 142, Northwestern 139. Six schools had less than 50 graduates: Alabama 49, Albany 47, State University of New York College of Medicine at Syracuse 44, Women's Medical College 43, Vermont 38, and University of Washington at Seattle 43. Utah, which was in the process of changing from an accelerated to a regular schedule gave the 1950-1951 senior class the option of staying on the accelerated program or of decelerating. Twenty-one students elected to remain on the accelerated program and were graduated in June, 1952; the remaining 28 students in this class will be graduated in December 1952.

Increases in the size of the graduating class were reported by 36 schools for the 1951-1952 academic year, and decreases were reported by 29; 7 had the same number as the previous year.

The Canadian medical schools reported 783 graduates, 75 less than for 1950-1951. The largest numbers were graduated by Toronto, 175, and McGill 115; the smallest by Ottawa, 44, and Queen's University, 50. The estimated number of graduates for 1952-1953, based on the enrollments reported for the senior classes in the schools in the United States is 6,555; for Canadian schools it is 844. The number of medical graduates of medical schools in the United States who held baccalaureate degrees increased again this year; the number of Canadian medical graduates holding this degree decreased. Table 10 shows that for the academic year 1951-1952 74.8% of all American medical graduates and 54.8% of Canadian medical graduates held baccalaureate degrees.

TABLE 5.—*Students in the Required Intern Year in the United States, 1931-1952*

1930-1931	1,025	1942-1943	639
1931-1932	1,067	1943-1944	451
1932-1933	1,106	1944 (Second Session)	447
1933-1934	1,183	1944-1945	452
1934-1935	1,233	1945-1946	488
1935-1936	1,213	1946-1947 *	582
1936-1937	1,255	1947-1948	447
1937-1938	1,132	1948-1949	458
1938-1939	1,152	1949-1950	454
1939-1940	1,152	1950-1951	501
1940-1941	1,058	1951-1952	379
1941-1942	767		

* Includes additional classes.

Responsibilities of Medical Schools for Other Students

The full scope of the educational responsibilities of the medical schools is not generally appreciated. These responsibilities extend far beyond the instruction given to undergraduate medical students. Only within recent years has attention been focused on the fact that, in addition to their primary responsibility to undergraduate medical students, the medical schools give instruction, in whole or in part, to large numbers of other students both at the undergraduate and the graduate level. This is an important fact, which should be kept in mind by those who seek to evaluate the contribution that a medical school makes to a university's program, and it is of special significance for those who seek to determine the costs of medical education. The numbers of students other than students of medicine who received instruction from the

TABLE 6.—*Students in the Medical and Basic Science Schools in the United States, 1931-1952*

Students in the required intern year are not included.

	Freshman	Sophomore	Junior	Senior	Total
1930-1931	6,456	5,538	5,080	4,908	21,982
1931-1932	6,260	5,462	4,932	4,885	22,135
1932-1933	6,426	5,479	5,017	4,948	22,466
1933-1934	6,457	5,571	4,988	4,937	22,799
1934-1935	5,356	5,642	5,142	4,905	22,888
1935-1936	6,605	5,458	5,230	5,020	22,564
1936-1937	5,910	5,269	5,140	5,158	22,095
1937-1938	5,791	5,225	4,986	5,036	21,587
1938-1939	5,764	5,160	4,947	4,921	21,302
1939-1940	5,794	5,177	4,921	4,894	21,271
1940-1941	5,837	5,254	4,969	4,849	21,379
1941-1942	6,218	5,406	5,087	4,942	22,031
1942-1943	6,425	5,828	5,278	5,100	22,631
1943-1944	6,561	6,071	5,640	5,257	23,529
1944 (second session)	6,648	6,140	6,084	5,794	24,666
1944-1945	6,523	5,979	5,700	5,826	24,028
1945-1946	6,060	5,750	5,751	5,655	23,216
1946-1947 *	6,564	5,575	5,767	5,994	23,900
1947-1948	6,487	5,758	5,154	5,340	22,739
1948-1949	6,688	6,194	5,702	5,086	23,670
1949-1950	7,042	6,344	6,079	5,638	25,103
1950-1951	7,177	6,690	6,263	6,056	26,186
1951-1952	7,441	6,863	6,577	6,195	27,076

* Includes additional classes.

faculties of medical schools in the United States and Canada are listed by general categories in table 11.

The total of students other than undergraduate medical students for whom medical faculties provided instruction in 1951-1952 was 55,437. Since the total number of undergraduate medical students was 27,076, it is clear that in 1951-1952, as in the previous year, the medical students constituted less than one-third of all students receiving instruction from medical faculties. To be sure, students in several of the categories listed did not receive full-time instruction comparable to that given the medical students; nevertheless, the medical faculties did provide full courses of instruction for 17,144 students, an increase of 324 over last year. These included physicians and other graduate students working toward advanced degrees in the basic medical sciences, students in technical schools, interns, residents, and fellows in the medical specialties, and, in several schools, dental students as well.

Total figures for the number of students, other than medical students, who have received instruction from the medical schools since 1947-1948, are summarized in table 12. Since the statistics for the years 1947-1948 through 1949-1950 are incomplete in several categories, the gross totals for those years should not be compared with the gross totals for 1950-1952.

TABLE 7.—*Medical Schools of the United States in Order of Size of Total Enrollment, 1951-1952*

Four Year Medical Schools	
University of Illinois	671
University of Tennessee	652
Jefferson Medical College	651
University of Michigan	615
Indiana University	577
University of Texas	543
State University of New York, New York City	537
Northwestern University	523
Harvard Medical School	516
Temple University	514
University of Pennsylvania	513
Tulane University	511
New York University	510
University of Minnesota	499
St. Louis University	495
New York Medical College	486
Columbia University	458
Ohio State University	458
Louisiana State University	438
Georgetown University	435
Tufts College Medical School	429
State University of Iowa	418
University of Kansas	412
University of Maryland	390
University of Pittsburgh	387
University of Louisville	386
College of Medical Evangelists	384
Marquette University	384
Southwestern Medical School	375
Washington University	372
Medical College of Virginia	365
Hahnemann Medical College of Philadelphia	364
University of Cincinnati	355
Baylor University	355
George Washington University	352
Stritch School of Medicine	343
University of Nebraska	342
Cornell University	329
University of Arkansas	327
Western Reserve University	324
Duke University	321
University of Oklahoma	316
University of Colorado	313
Medical College of Georgia	312
University of Wisconsin	311
Johns Hopkins University	299
Howard University	295
Creighton University	295
University of Oregon	294
University of Virginia	286
Emory University	285
Yale University	283
University of California	282
Boston University	281
University of Rochester	279
Chicago Medical School	277
University of Southern California	276
University of Chicago	272
Wayne University	272
University of Buffalo	270
University of Washington	269
Meharry Medical College	257
State University of New York, Syracuse	254
Stanford University	246
Medical College of South Carolina	240
Medical College of Alabama	237
Bowman Gray School of Medicine	220
Albany Medical College	209
Vanderbilt University	207
University of Utah	205
Woman's Medical College of Pennsylvania	187
University of Vermont	179
Schools of the Basic Medical Sciences	
University of Mississippi	117
University of North Carolina	113
University of Missouri	81
University of North Dakota	75
University of South Dakota	66
West Virginia University	61
Dartmouth Medical School	48
Totals	27,076

TABLE 8.—*Schools,*[1] *Students and Graduates in the United States, 1910-1952*

Class A and Approved Medical Schools [2]
Students in the required intern year are not included

	Schools	Students	Graduates
1910	66	12,530	3,165
1915	67	11,314	2,629
1920	70	12,559	2,680
1921	70	13,488	2,811
1922	69	14,625	2,304
1923	70	16,454	2,881
1924	70	16,775	3,343
1925	71	17,462	3,842
1926	71	17,887	3,732
1927	73	18,754	3,798
1928	74	19,794	4,091
1929	75	20,843	4,412
1930	76	21,597	4,565
1931	76	21,982	4,735
1932	76	22,135	4,936
1933	77	22,466	4,895
1934	77	22,799	5,035
1935	77	22,888	5,101
1936	77	22,564	5,183
1937	77	22,095	5,377
1938	77	21,587	5,194
1939	77	21,302	5,089
1940	77	21,271	5,097
1941	77	21,379	5,275
1942	77	22,031	5,163
1943	76	22,631	5,223
1944	77	23,529	5,134
1944 (second session)	77	24,666	5,169
1945	77	24,028	5,136
1946 (to May 31)	77	23,216	5,826
1947	77	23,900	6,389
1948	77	22,739	5,543
1949	78	23,670	5,094
1950	79	25,103	5,553
1951	79	26,186	6,135
1952	79	27,076	6,080

1. Includes figures for schools of the basic medical sciences.
2. Medical schools graded as Class A from 1910-1929; as approved since 1929.

The gross total of 55,437 extra students reported this year is 1,825 less than the total reported last year. Significant increases in the number of dental students (772), nursing students (434), and physicians enrolled in courses leading to advanced degrees (344) were offset by decreases in all other categories listed. The major decreases were among physicians enrolled in refresher or continuation courses (1,825), pharmacy students (455), and graduate students in the basic medical sciences (410).

By far the most important of these changes is the decrease of 410 in graduate students working toward advanced degrees in the basic medical sciences. There has been general concern that the supply of basic science teachers, curtailed during World War II, has not yet caught up with the demand. The progressive increase in the numbers of such students from 1,090 in 1947-1948 to 2,720 in 1950-1951 was regarded as a hopeful sign.

This year's decline of 14.6% among graduate students in the basic sciences will be a cause for real concern to

medical educators if it continues. Some encouragement may be taken from the fact that the number of physicians enrolled for advanced degrees, many of whom are pursuing graduate studies in the basic medical sciences, increased, as noted above, by 344. Thus the combined total of graduate students is only 66 less than last year's record number of 4,281. Evidence is not available at this time to determine whether the decline in the number of graduate students is due to the Korean conflict, a shift of interest, or other reasons.

Canadian medical schools reported a total of 4,488 additional students this year, as compared with 3,225 last year. This increase of 1,263 is accounted for largely by increases in the number of nursing students (+789), pharmacy students (+295), interns (+103), and physicians enrolled in refresher or continuation courses (+82). The number of graduate students in these schools working toward degrees in the basic medical sciences increased from 130 to 160.

TABLE 9.—*Schools,*[1] *Students and Graduates in the United States, 1910-1929*

Class B and Class C Medical Schools

Students in the required intern year are not included

	Class B			Class C		
	Schools	Students	Graduates	Schools	Students	Graduates
1910	43	6,944	854	22	2,052	421
1915	22	2,668	688	15	909	219
1920	10	731	162	8	798	205
1921	9	832	200	7	553	180
1922	7	852	143	7	663	182
1923	4	522	83	7	456	156
1924	4	583	115	6	370	104
1925	3	554	118	6	184	14
1926	3	582	130	5	371	100
1927	3	564	117	4	344	120
1928	2	371	96	4	380	75
1929	1	35	34	0	0	0

1. Includes figures for schools of the basic medical sciences.

Distribution of Students by Sex

Classification by sex of all students enrolled in medical and basic science schools in the United States and Canada for the academic year 1951-1952 is given in table 13. This table also gives similar data for the graduates of each school.

The total number of women students and graduates and the proportion of women to all persons in these categories is given for each year, since 1905, in table 14. Figures for the years 1905 through 1929 include statistics for Class B and C schools; those for 1930 and subsequent years represent only the approved schools.

Women in medical schools of the United States for the year 1951-1952 totalled 1,471, which is 93 less than last year. They now represent 5.4% of all students as compared to 5.9% last year. Thus for the fifth consecutive year both the proportion of women and the actual number of women students has declined. Women in the freshman class numbered 394, or 5.3% of the total, as compared to 376 or 5.3% last year. Women, however, constituted only 5.6% of the applicants to the 1951-1952 class. It is thus evident that in relative terms women are equally as successful as men in gaining admission to medical school. The number of women graduates declined for the third year. This year's total was 351, or 5.7% of all graduates, as compared with 468, or 7.6% of all graduates last year. Dartmouth and Jefferson had no women students, and the Woman's Medical College no men. The number of schools with more than 30 women was 9, the same as last year. Canadian schools had 211 women students, or 6.1% of all students, and had 36 women graduates, constituting 4.6% of the total.

TABLE 10.—*Graduates with Baccalaureate Degrees in Medical Schools in the United States and Canada, July 1, 1951 to June 30, 1952*

	Graduates	Degrees	Per Cent with Degrees
United States			
Medical College of Alabama	49	48	98.0
University of Arkansas	78	49	62.8
College of Medical Evangelists	80	50	62.5
University of Southern California	66	38	57.6
Stanford University	54	54	100.0
University of California	65	63	96.9
University of Colorado	74	70	94.6
Yale University	66	56	84.8
Georgetown University	95	83	87.4
George Washington University	86	67	77.9
Howard University	74	74	100.0
Emory University	68	66	97.1
Medical College of Georgia	76	45	59.2
Chicago Medical School	51	51	100.0
Northwestern University	139	138	100.0
Stritch School of Medicine	88	19	21.6
University of Chicago	62	49	79.0
University of Illinois	169	154	91.1
Indiana University	137	124	90.5
State University of Iowa	80	60	75.0
University of Kansas	82	82	100.0
University of Louisville	94	73	77.8
Louisiana State University	98	49	50.0
Tulane University	132	89	67.4
Johns Hopkins University	79	79	100.0
University of Maryland	97	57	58.7
Boston University	68	68	100.0
Harvard Medical School	142	110	77.3
Tufts College Medical School	98	94	95.9
University of Michigan	126	93	73.8
Wayne University	62	50	80.6
University of Minnesota	109	109	100.0
St. Louis University	115	52	45.2
Washington University	99	80	80.8
Creighton University	68	40	58.8
University of Nebraska	84	77	91.7
Albany Medical College	47	35	74.5
State University of New York, New York City	103	91	88.3
University of Buffalo	64	39	60.9
Columbia University	105	99	94.3
Cornell University	80	78	97.5
New York Medical College	109	95	87.1
New York University	114	108	94.7
University of Rochester	70	62	88.6
State University of New York, Syracuse	44	25	56.8
Duke University	74	28	37.8
Bowman Gray School of Medicine	58	46	79.3
University of Cincinnati	87	64	73.6
Western Reserve University	84	71	84.5
Ohio State University	83	79	95.2
University of Oklahoma	54	42	77.8
University of Oregon	69	69	100.0
Hahnemann Medical College	77	72	93.5
Jefferson Medical College	160	136	85.0
Temple University	128	93	72.7
University of Pennsylvania	126	108	85.7
Woman's Medical College	43	40	93.0
University of Pittsburgh	91	6	6.6
Medical College of South Carolina	57	46	80.7
University of Tennessee	150	69	46.0
Meharry Medical College	62	56	90.3
Vanderbilt University	51	49	96.1
Southwestern Medical School	72	50	69.4
University of Texas	89	65	73.0
Baylor University	83	41	49.4
University of Utah	21	20	95.2
University of Vermont	38	37	97.3
University of Virginia	72	55	76.4
Medical College of Virginia	102	89	87.3
University of Washington	43	20	46.5
University of Wisconsin	70	68	97.1
Marquette University	90	56	62.2
Totals	6,080	4,767	78.4
Canada			
University of Alberta	53	51	96.2
University of Manitoba	83	14	16.9
Dalhousie University	53	12	22.6
Queen's University	50	6	12.0
University of Western Ontario	60	37	61.7
University of Toronto	175	31	17.7
McGill University	115	103	89.6
University of Montreal	83	83	100.0
Laval University	67	67	100.0
University of Ottawa	44	25	56.8
Totals	783	429	54.8
Totals	6,863	5,196	75.7

TABLE 11.—*Other Students for Whom Medical Schools Were Responsible, 1951-1952*

School	Part Time or Special Students Working Toward M.D. Degree	Physicians Enrolled for Advanced Degrees	Other Graduate Students Working for Degrees in Basic Medical Sciences	Dental Students Receiving Instruction from Medical School Faculty	Pharmacy Students Receiving Instruction from Medical School Faculty	Nursing Students Receiving Instruction from Medical School Faculty	Students in Technical Schools Receiving Instruction from Medical School Faculty	Nonmedical Students Taking Medical Courses	Physicians Enrolled in Refresher or Continuation Courses	Physicians Enrolled in Formal Basic Science Courses in Preparation for Specialty Board Certification	Physicians Holding Appointments as Fellows	Interns for Whose Instruction and Supervision the Medical School Was Primarily Responsible	Residents for Whose Instruction and Supervision the Medical School Was Primarily Responsible	Totals
UNITED STATES														
Medical College of Alabama	6	0	25	102	0	75	39	0	0	9	9	57	47	369
University of Arkansas	4	0	10	0	50	0	19	2	225	0	0	9	32	351
College of Medical Evangelists	3	2	0	0	0	140	51	0	100	7	0	80	44	427
Stanford University	0	0	1	0	0	101	36	0	200	0	20	49	79	486
University of California	0	0	0	204	190	64	37	233	500	62	1	20	30	1,341
University of Southern California	0	0	26	0	0	0	0	0	261	0	0	135	135	557
University of Colorado	1	203	49	0	0	200	33	0	1,112	21	0	16	127	1,762
Yale University	0	0	115	0	0	380	0	85	291	42	34	39	84	1,070
George Washington University	0	0	92	0	35	0	7	761	119	0	15	21	33	1,083
Georgetown University	0	1	14	203	0	55	1	2	84	0	10	12	51	433
Howard University	0	0	0	148	79	37	0	42	0	0	6	0	0	312
Emory University	1	0	15	150	0	93	28	0	132	0	10	46	121	596
Medical College of Georgia	7	0	1	0	0	48	4	5	61	0	0	4	37	167
Chicago Medical School	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Northwestern University	2	45	48	0	0	175	30	0	16	0	0	0	0	316
Stritch School of Medicine	2	2	61	0	0	0	0	0	0	0	1	0	0	66
University of Chicago	0	6	0	0	0	0	0	0	0	0	28	29	90	147
University of Illinois	0	46	80	280	196	102	0	2	0	27	0	24	94	851
Indiana University	0	11	5	133	0	197	95	0	424	19	2	23	81	990
State University of Iowa	1	5	81	110	85	317	39	810	4	45	0	12	140	1,649
University of Kansas	0	12	18	1	5	157	0	1,350	1,382	1	4	30	62	3,022
University of Louisville	2	0	2	180	0	100	0	12	223	0	8	14	67	608
Louisiana State University	1	0	6	0	0	0	0	0	32	8	1	0	84	132
Tulane University	1	41	32	0	0	91	0	156	191	17	47	34	90	700
Johns Hopkins University	1	0	7	0	0	202	0	13	22	0	68	0	0	313
University of Maryland	0	0	27	0	67	68	4	0	75	59	22	24	67	413
Boston University	0	0	44	0	0	58	25	51	22	0	4	0	5	209
Harvard Medical School	0	0	37	33	0	0	0	0	431	67	341	0	0	909
Tufts College Medical School	0	0	9	272	0	0	0	0	98	0	58	0	0	437
University of Michigan	4	3	525	85	112	170	49	320	1,685	19	7	52	65	3,096
Wayne University	1	60	42	72	70	9	65	7	202	0	17	0	0	545
University of Minnesota	0	976	186	225	131	133	0	916	1,296	0	0	29	212	4,104
University of Mississippi	5	1	16	0	56	1	0	8	0	0	0	0	0	87
St. Louis University	2	0	19	160	0	165	55	0	5	0	0	1	51	458
University of Missouri	8	0	16	0	0	0	0	691	0	0	0	0	0	715
Washington University	0	0	17	0	0	0	71	0	61	18	29	51	97	350
Creighton University	5	0	2	88	100	120	8	12	0	0	0	14	12	361
University of Nebraska	0	0	11	0	0	191	12	0	22	0	0	14	29	279
Dartmouth Medical School	0	0	0	0	0	99	12	2	0	0	0	12	65	190
Albany Medical College	0	0	3	0	90	367	0	0	64	0	0	28	41	593
Columbia University	0	6	0	80	0	308	0	81	455	33	20	37	189	1,209
Cornell University	1	1	17	0	0	78	0	0	28	18	37	0	0	180
State University of New York, New York City	2	9	0	0	0	0	0	0	27	0	12	0	0	50
New York Medical College	5	0	5	0	0	70	0	0	90	0	5	10	24	209
New York University	0	31	30	0	0	498	0	76	1,082	99	59	51	71	1,997
State University of New York, Syracuse	0	0	3	0	0	0	0	0	219	0	0	20	58	300
University of Buffalo	0	0	28	118	62	28	0	0	98	0	2	0	0	346
University of Rochester	0	0	0	0	0	189	0	0	0	0	25	46	88	348
Duke University	2	0	0	0	0	130	45	10	10	10	21	75	75	378
University of North Carolina	3	0	18	75	55	0	0	153	319	0	2	0	0	625
Bowman Gray School of Medicine	0	0	1	0	0	159	6	0	0	0	0	8	48	222
University of North Dakota	1	0	15	0	0	50	15	35	0	0	0	0	0	116
Ohio State University	2	20	37	514	32	235	39	967	0	0	4	28	75	1,943
University of Cincinnati	0	7	11	0	0	120	6	5	334	0	21	52	101	657
Western Reserve University	9	0	41	171	0	297	17	3	216	42	40	0	0	836
University of Oklahoma	1	0	28	0	0	56	14	0	399	70	0	32	38	638
University of Oregon	0	3	17	0	0	420	23	6	313	0	0	18	62	862
Hahnemann Medical College	0	0	6	0	0	108	22	0	0	0	0	0	0	136
Jefferson Medical College	0	0	24	0	0	0	0	0	0	43	8	9	37	121
Temple University	1	86	1	0	0	284	19	0	27	3	0	19	86	526
University of Pennsylvania	1	267	86	140	0	31	0	49	30	0	86	26	183	899
University of Pittsburgh	2	0	0	0	0	808	0	0	141	226	0	9	88	1,274
Woman's Medical College of Pennsylvania	0	0	0	0	0	58	0	0	0	0	7	1	9	75
Medical College of South Carolina	0	0	15	0	86	148	8	0	362	0	13	7	22	601
University of South Dakota	3	1	3	0	0	0	0	135	0	1	0	0	0	143
Meharry Medical College	3	0	10	137	0	56	30	0	0	0	0	8	12	256
University of Tennessee	0	16	24	185	127	134	18	0	0	0	0	0	0	504
Vanderbilt University	0	0	5	0	0	117	0	0	0	0	8	30	48	208
Baylor University	0	0	6	0	0	0	0	0	158	0	3	50	87	304
Southwestern Medical College	8	0	0	0	0	0	0	0	6	5	1	24	186	230
University of Texas	1	0	16	75	0	273	28	5	384	0	0	23	110	915
University of Utah	5	1	37	0	44	178	0	756	160	0	13	18	62	1,274
University of Vermont	3	0	13	0	0	35	30	1	0	1	28	0	0	111
Medical College of Virginia	0	0	21	202	218	130	39	54	625	0	3	26	79	1,397
University of Virginia	0	3	0	0	0	300	0	0	266	0	15	30	66	680
University of Washington	0	7	80	261	37	252	35	944	480	0	25	26	28	2,175
West Virginia University	1	0	4	0	22	0	22	0	0	0	0	0	0	49
Marquette University	9	39	5	222	0	0	0	0	201	0	0	0	57	533
University of Wisconsin	5	0	61	0	93	154	176	940	113	6	2	14	50	1,614
Totals	125	1,905	2,310	4,626	2,042	9,629	1,312	9,690	15,829	978	1,204	1,576	4,211	55,437
CANADA														
University of Alberta	0	0	15	0	0	6	0	0	217	0	0	0	0	232
University of Manitoba	0	6	0	0	0	0	0	0	41	0	0	87	6	140
Dalhousie University	0	0	0	24	23	13	0	0	236	5	0	53	0	354
Queen's University	0	3	7	0	0	188	0	95	40	5	8	13	8	367
University of Ottawa	0	10	8	0	0	12	0	0	11	0	0	47	0	88
University of Toronto	0	58	48	112	147	29	0	657	112	73	55	0	0	1,291
University of Western Ontario	0	4	34	0	0	49	0	0	0	9	12	22	12	142
Laval University	1	5	36	0	0	955	36	0	7	4	0	67	0	1,111
McGill University	0	9	0	0	0	0	0	0	0	0	0	0	0	9
University of Montreal	0	11	6	92	263	0	0	105	0	37	0	87	0	601
University of Saskatchewan	0	0	6	0	70	17	0	60	0	0	0	0	0	153
Totals	1	106	160	228	503	1,263	36	917	664	133	75	376	26	4,488

Veterans in Medical Schools

Veterans enrolled in medical and basic science schools in the United States in 1951-1952 numbered 11,436, or 42.2% of all students. This represents a decrease of 3,092, or 13.2%, as compared with the preceding year. There were 54 women veterans.

The veteran and nonveteran status of students by classes for the medical and basic science schools in this country is recapitulated in table 15. Veterans comprised 22.5% of the freshman class, or 17.4% less than in last year's first year class. The percentages of veterans in other classes were: sophomores 39.3, juniors 52.2, and seniors 58.5. The number of veterans in medical schools has been steadily declining, and the present freshman class has the smallest number admitted since the end of the war.

Negro Medical Students

The total number of Negro medical students enrolled in medical schools in the United States during 1951-1952 was 704, or 2.6% of all students. These students were enrolled in 51 medical schools with 283 enrolled at Howard University, 257 at Meharry, and 164 at other schools. There were 200 freshmen, 172 sophomores, 163 juniors, and 169 seniors.

TABLE 12.—*Other Students for Whom Medical Schools in the United States Were Responsible, 1947-1952*

	Part Time or Special Students Working Toward M.D. Degrees	Physicians Enrolled for Advanced Degrees	Other Graduate Students Working for Degrees in Basic Medical Sciences	Dental Students Receiving Instruction from Medical School Faculty	Pharmacy Students Receiving Instruction from Medical School Faculty	Nursing Students Receiving Instruction from Medical School Faculty	Students in Technical Schools Receiving Instruction from Medical School Faculty	Nonmedical Students Taking Medical Courses	Physicians Enrolled in Refresher or Continuation Courses	Physicians Enrolled in Formal Basic Science Courses in Preparation for Special Board Certification	Physicians Holding Appointments as Fellows	Interns for Whose Instruction and Supervision the Medical School was Primarily Responsible	Residents for Whose Instruction and Supervision the Medical School was Primarily Responsible	Totals
1947-1948.....	105	813	1,090	*	*	*	*	478	13,187	2,338	*	*	*	18,011
1948-1949.....	93	1,133	1,765	*	*	*	*	2,039	15,695	1,697	*	*	*	22,422
1949-1950.....	110	1,125	2,094	*	*	*	*	2,720	17,930	1,087	1,135	1,900	4,345	32,506
1950-1951.....	106	1,561	2,720	3,854	2,497	9,195	1,402	9,838	17,654	1,152	1,238	1,786	4,259	57,262
1951-1952.....	125	1,905	2,310	4,626	2,042	9,629	1,312	9,690	15,829	978	1,204	1,576	4,211	55,437
Totals.....	539	6,537	9,979	8,480	4,539	18,824	2,714	24,765	80,295	7,252	3,577	5,322	12,815	185,638

* Figures not available.

Geographic Source of Freshman Students

The residence at the time of enrollment of students in the 1951-1952 freshman class of each medical and basic science school in the United States and Canada is shown in table 16. Since persons frequently change residence and may move to states other than the one in which they were born, the home states listed in this table are not necessarily states either of birth or permanent residence.

The residences of 863 freshmen in Canadian schools are given in table 16. This total differs from the total given in other tables because it employs the figures for the first class of premedical students at Queen's University and Toronto, since these students are already registered in those schools.

The number of schools that excluded out-of-state students diminished for the first time in six years and now totals 15, as compared with 17 in 1950-1951. North Carolina, South Dakota, and Tennessee, which last year took no out-of-state students, admitted a certain number this year. Pittsburgh, which last year admitted 48 out-of-state students, accepted none this year. Three schools admitted only two students from other states.

Of the total of 3,665 freshmen admitted last year to state and municipally-owned schools in the United States, 283, or 7.7%, were nonresidents, as compared with 236, or 6.9%, last year and 17.4% in 1941-1942. Privately owned schools last year admitted 3,771 students, of whom 2,028, or 53.8%, were residents of states other than that in which the school was located. This represents a slight increase over the 52.6% of nonresidents admitted last year. A recapitulation of the number of resident students, students from other states, students from territories and possessions of the United States, Canadian students, and foreign students enrolled in each school in the United States and Canada is given in table 17. The number of first year medical students per 100,000 of population for each state is given in table 18. For the entire nation, there were 4.8 freshmen medical students per 100,000 of inhabitants, the same number as last year. This is the third consecutive year in which significant increases in freshman enrollments have been matched by a proportionate increase in population. The 11 states that have no medical or basic science schools had an average of 3.7 first year students, as compared with 4.3 per 100,000 population last year, while states that had such schools had an average of 5.2 freshmen, as compared with 4.9 per 100,000 last year. Thus, although there has been an increase in the number of schools that are admitting nonresident students, the proportion of students admitted to medical schools from states that have no medical or basic science schools has declined.

There were 52 students admitted from United States territories and possessions, 4 less than last year. Seven Canadians, three more than last year, were admitted to schools in the United States. Sixty-four other foreign students, the same number as last year, were admitted. Of the 863 students entering Canadian schools, 68, or 17 more than last year, were from the United States. Canadian schools enrolled 16 freshmen from other countries.

TABLE 13.—*Distribution of Students and Graduates by Sex in the United States and Canada, 1951-1952*

	Students		Graduates	
United States	Men	Women	Men	Women
Medical College of Alabama	229	8	47	2
University of Arkansas	312	15	75	3
College of Medical Evangelists	361	23	72	8
University of Southern California	260	16	64	2
Stanford University	228	18	52	2
University of California	264	18	59	6
University of Colorado	292	21	71	3
Yale University	263	20	58	8
Georgetown University	409	26	88	7
George Washington University	343	9	84	2
Howard University	267	28	70	4
Emory University	281	4	68	0
Medical College of Georgia	295	17	72	4
Chicago Medical School	269	8	50	1
Northwestern University	496	28	129	10
Stritch School of Medicine	333	10	85	3
University of Chicago	252	20	59	3
University of Illinois	643	28	164	5
Indiana University	546	31	128	9
State University of Iowa	404	14	75	5
University of Kansas	396	16	77	5
University of Louisville	366	20	89	5
Louisiana State University	412	26	91	7
Tulane University	494	17	126	6
Johns Hopkins University	278	21	74	5
University of Maryland	376	14	94	3
Boston University	261	20	62	6
Harvard Medical School	484	32	135	7
Tufts College Medical School	415	14	95	3
University of Michigan	583	32	118	8
Wayne University	266	6	62	0
University of Minnesota	470	29	102	7
University of Mississippi	114	3	..	..
St. Louis University	489	6	114	1
University of Missouri	79	2	..	..
Washington University	351	21	94	5
Creighton University	289	6	66	2
University of Nebraska	323	19	78	6
Dartmouth Medical School	48	0	..	..
Albany Medical College	198	11	45	2
State University of New York, New York City	506	31	94	9
University of Buffalo	254	16	59	5
Columbia University	412	46	95	10
Cornell University	313	16	77	3
New York Medical College	448	38	94	15
New York University	470	40	101	13
University of Rochester	262	17	65	5
State University of New York, Syracuse	243	11	41	3
University of North Carolina	110	3	..	..
Duke University	307	14	69	5
Bowman Gray School of Medicine	211	9	54	4
University of North Dakota	73	2	..	..
University of Cincinnati	352	3	85	2
Western Reserve University	299	25	78	6
Ohio State University	443	15	80	3
University of Oklahoma	306	10	54	0
University of Oregon	282	12	66	3
Hahnemann Medical College	344	20	72	5
Jefferson Medical College	651	0	160	0
Temple University	479	35	120	8
University of Pennsylvania	493	20	122	4
Woman's Medical College	0	187	0	43
University of Pittsburgh	370	17	86	5
Medical College of South Carolina	234	6	55	2
University of South Dakota	63	3	..	..
University of Tennessee	630	22	145	5
Meharry Medical College	248	9	59	3
Vanderbilt University	201	6	50	1
Southwestern Medical School	354	21	68	4
University of Texas	520	23	86	3
Baylor University	335	20	80	3
University of Utah	195	10	20	1
University of Vermont	172	7	38	0
University of Virginia	282	4	71	1
Medical College of Virginia	338	27	97	5
University of Washington	245	15	41	2
West Virginia University	58	3	..	..
University of Wisconsin	296	15	68	2
Marquette University	368	16	87	3
Totals	25,605	1,471	5,729	351
Canada				
University of Alberta	207	15	51	2
University of Manitoba	251	21	79	4
Dalhousie University	212	8	51	2
Queen's University	218*	20*	47	3
University of Western Ontario	228	12	57	3
University of Toronto	606†	44†	165	10
McGill University	425	28	109	6
University of Montreal	372	35	78	5
Laval University	474‡	10‡	66	1
University of Saskatchewan	52	12	..	..
University of Ottawa	202§	6§	44	0
Totals	3,247	211	747	36
Totals	28,852	1,682	6,476	387

* Fifty-eight male and 6 female premedical students excluded. Forty-seven male and 3 female fifth year students excluded.

† Two hundred forty-two male and 26 female premedical students excluded.

‡ Ninety-nine male and 4 female premedical students excluded.

§ Thirty-six male and 2 female premedical students excluded.

Assignment of Clinical Clerks to Private Patients

When the clinical clerkship was first introduced into the curriculum, medical students were assigned almost exclusively to charity or service patients on the wards of public and voluntary hospitals. Only a few medical schools, which did not have access to hospitals with large public wards, at an early date assigned students to the private patients of members of the faculty. In recent years, more and more schools have adopted the practice of utilizing private patients for clinical clerkships. Two forces have been primarily responsible for this trend. First, the rapid growth of voluntary insurance plans for hospitalization and medical care and the prevailing general economic prosperity in recent years have in many hospitals greatly reduced the number of charity or service patients. Thus to provide their students with a sufficient number of patients for study, medical schools in many instances have had no choice but to utilize private patients.

TABLE 14.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,073	4.1	219	4.0
1910	907	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	964	4.9	189	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.5
1931	990	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1,056	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1,077	4.7	207	4.1
1936	1,133	5.0	246	4.7
1937	1,113	5.1	238	4.4
1938	1,161	5.4	237	4.6
1939	1,144	5.4	260	5.1
1940	1,145	5.4	253	5.0
1941	1,146	5.4	280	5.3
1942	1,164	5.3	279	5.4
1943	1,150	5.1	241	4.6
1944	1,176	5.0	239	4.7
1944 (second session)	1,141	4.6	252	4.9
1945	1,352	5.6	262	5.1
1946	1,868	8.0	242	4.2
1947 *	2,183	9.1	342	5.4
1948	2,159	9.5	392	7.1
1949	2,109	8.9	612	12.1
1950	1,806	7.2	595	10.7
1951	1,564	5.9	468	7.6
1952	1,471	5.4	351	5.7

* Includes additional classes.

The second force has been the growing belief that it is advantageous for students during their clinical training to have experience with private patients who as a group frequently present different types of medical problems, particularly with respect to the bearing of social and economic factors on illness, than do patients from the lowest income groups.

Because of the trend toward the greater use of private patients, it was thought desirable in securing information for this year's report to obtain data from the medical schools as to the extent to which students are being assigned to private patients. Forty-seven of the four year medical schools report that students are assigned to private patients on one or more clinical clerkships. Twenty-five schools report that no private patients are being used for clerkships at this time. Of the 47 schools assigning private patients, 17 report that they have been doing so only within the last five years. The extent to

totals 15, as compared with 17 in 1950-1951. North

Indian schools enrolled 16 freshmen from other countries.

which private patients are used varies widely. In 13 schools private patients constitute 10% or less of the total number of patients assigned during clerkships, in 9 schools they constitute between 11 and 20%, in 7 schools between 21 and 30%, and in 7 schools between 31 and 50%. In only eight schools do they constitute more than 50%. Three schools were unable to estimate the extent to which private patients are assigned for clerkships. Thirty-four schools state that instruction utilizing private patients is in general as satisfactory as instruction with service patients, eight schools state that it is less satisfactory, two state that it varies on different services, and five schools offered no opinion or stated that their experience has been too limited to form the basis for an opinion.

It may be predicted that the years to come will inevitably see a progressive increase in the proportion of private patients assigned during clinical clerkships. Some medical educators are concerned that this may constitute a serious problem in maintaining a high quality of instruction; others believe that it need not. The essential problem involved in utilizing private patients successfully for teaching lies in giving the instructor adequate control

TABLE 15.—*Enrolment by Classes of Veterans and Nonveterans in the Medical and Basic Science Schools in the United States, 1951-1952*

	Men Veterans	Other Men	Total Men	Women Veterans	Other Women	Total Women	Total Men and Women
Freshmen.....	1,669	5,378	7,047	6	388	394	7,441
Sophomores.....	2,689	3,820	6,509	10	344	354	6,863
Juniors.....	3,415	2,791	6,206	21	350	371	6,577
Seniors.....	3,609	2,234	5,843	17	335	352	6,195
Totals.....	11,382	14,223	25,605	54	1,417	1,471	27,076

of the patient's medical work-up, therapy, duration of hospitalization, and follow-up. When ward patients are used, full control of these factors is usually vested in the instructor, who commonly also serves as the patient's staff physician. Thus the work-up, therapy, and follow-up of the patient can usually be so arranged that the student will derive the maximum educational experience from his study of the patient. In teaching with private patients, other factors must be considered, such as the cost to the patient of laboratory tests, hospitalization, drugs, and consultations, the prerogatives of the patient's private physician, and the difficulties encountered in following the patient when he becomes ambulatory and receives his treatment in his physician's private office. These problems are not insurmountable, but they constitute very real practical difficulties that medical schools face in trying to maintain high standards of instruction when private patients are used for clinical clerkships. Their successful solution will depend largely on the willingness of the private physician to cooperate with the medical school's educational program and the medical school's ability to keep to a minimum any added cost or inconvenience that may result to the patient or his physician because of his participation in the clerkship program.

Required Internships

The six schools in the United States and five schools in Canada that require that their students complete an internship are listed in table 19. The addition of Laval University Faculty of Medicine represents the only change in the list since last year. Although only these few schools require an internship, more than 99% of all medical graduates have, for many years, voluntarily served internships. In addition, a high proportion of medical graduates take additional training after the internship.

Duke University gives the M.D. degree at the end of the four year medical course but requires its students to sign a written agreement that they will spend two years training in a hospital or laboratory before entering practice. Several other schools permit substitution of a year of laboratory work for the internship. The number of United States students enrolled in intern years required by their schools is shown in table 5.

One year of internship is required as a prerequisite to licensure by the licensing boards of 25 states, the District of Columbia, Alaska, Guam, Hawaii, Puerto Rico, and the Virgin Islands. The internship requirement was instituted last year by California and Kentucky, and was discontinued by Kansas. Ten boards, five less than last year, require a rotating internship. Those boards requiring internships and those requiring rotating internships are indicated in table 20. North Dakota, Vermont, Wisconsin, and Hawaii, which formerly required a rotating service, will now accept either a rotating, mixed, or a straight service. Michigan will accept 24 months of mixed or straight intern service in lieu of a rotating service. New Jersey will accept a two year residency in a specialty or one year of postgraduate work in place of the rotating internship and Alaska allows the substitution of four years of practice as substitute for the internship requirement.

Licenses of candidates from schools that require an internship are withheld by 10 states until completion of the internship (California, Connecticut, Iowa, Michigan, Oklahoma, Tennessee, Utah, Vermont, Washington, and Wisconsin). Certain states in addition to those listed in table 21, require internships of foreign medical graduates and of candidates seeking licensure on the basis of reciprocity or endorsement.

Hospitals approved for intern training by the Council on Medical Education and Hospitals of the American Medical Association are generally acceptable in those states that require internship for licensure. The current list of approved internships will be published in the Sept. 27, 1952, issue of THE JOURNAL.

Preprofessional Requirements

The minimum educational requirement of the Council on Medical Education and Hospitals for students entering medical school after Jan. 1, 1953, will be three years of college training for the average student. Prior to this year the Council had since 1918 required two years of college and since 1938 had recommended three years. Although the present minimum requirement is three years, it is recommended that, in order to acquire a broad general education, premedical students take the full, four year college course. In rare instances, a medical school will be justified in admitting an exceptionally able student at the end of two years of college.

All state licensing boards require that an applicant for licensure present evidence of having completed at least

TABLE 16.—*Residence of Freshman Medical Students*

Marginal Number		1 Alabama	2 Arizona	3 Arkansas	4 California	5 Colorado	6 Connecticut	7 Delaware	8 Dist. of Columbia	9 Florida	10 Georgia	11 Idaho	12 Illinois	13 Indiana
1	Medical College of Alabama	80	..	..	..	..	..	..	..	..	..	..	..	..
2	**University of Arkansas School of Medicine**	..	..	90	..	..	..	..	..	..	..	..	..	..
3	University of California Medical School	..	..	..	69	..	..	..	..	..	..	1	..	..
4	**College of Medical Evangelists**	..	2	..	32	2	..	..	..	1	..	1	2	2
5	University of Southern California School of Medicine	..	2	..	59	1	..	..	..	..	..	..	2	..
6	**Stanford University School of Medicine**	..	2	..	48	..	..	..	..	..	..	1	1	..
7	**University of Colorado School of Medicine**	..	..	..	..	65	..	..	..	..	..	..	1	..
8	**Yale University School of Medicine**	1	..	..	4	..	22	..	..	3	..	1	2	..
9	**Georgetown University School of Medicine**	..	..	..	1	..	14	..	12	..	..	..	..	..
10	George Washington University School of Medicine	1	..	..	9	1	1	1	18	2	1	..	5	..
11	**Howard University College of Medicine**	5	..	..	..	..	..	1	14	..	3	..	2	1
12	Emory University School of Medicine	8	..	..	..	..	..	..	..	25	33	..	..	..
13	**Medical College of Georgia**	..	..	..	..	..	..	..	..	..	79	..	..	..
14	Chicago Medical School	..	..	..	3	1	1	1	1	2	..	..	5	..
15	Stritch School of Medicine of Loyola University	..	1	..	2	..	3	..	..	..	..	..	47	5
16	**Northwestern University Medical School**	1	1	..	8	..	..	..	..	4	..	3	48	6
17	University of Chicago, The School of Medicine	..	..	..	8	..	..	..	..	..	..	..	22	2
18	**University of Illinois College of Medicine**	..	..	..	..	..	..	..	..	..	..	..	167	..
19	Indiana University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	147
20	**State University of Iowa College of Medicine**	..	1	..	1	..	..	..	..	..	..	..	1	..
21	University of Kansas School of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..
22	**University of Louisville School of Medicine**	1	..	1	2	..	..	..	..	..	..	..	..	2
23	Louisiana State University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
24	Tulane University of Louisiana School of Medicine	8	2	3	1	1	..	..	..	17	6	1	2	..
25	**Johns Hopkins University School of Medicine**	2	..	2	5	1	1	..	2	..	1	..	3	5
26	University of Maryland School of Medicine	..	..	..	..	..	3	1	2	1	..	..	..	1
27	**Boston University School of Medicine**	..	..	..	2	..	2	..	..	1	..	..	2	..
28	Harvard Medical School	..	2	..	7	..	6	..	..	5	1	..	3	4
29	**Tufts College Medical School**	..	..	..	1	..	16	1	..	1	..	..	1	..
30	University of Michigan Medical School	..	..	..	1	..	..	..	..	..	..	..	1	..
31	**Wayne University College of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
32	**University of Minnesota Medical School**	..	..	..	..	..	..	..	..	..	..	1	..	..
33	University of Mississippi School of Medicine*	..	..	..	..	..	..	..	..	..	..	..	..	..
34	**University of Missouri School of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
35	St. Louis University School of Medicine	..	..	..	8	2	1	1	..	1	..	..	9	4
36	**Washington University School of Medicine**	..	1	3	7	3	..	1	..	2	1	1	8	..
37	Creighton University School of Medicine	..	2	..	7	1	..	..	..	..	..	..	2	..
38	**University of Nebraska College of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
39	Dartmouth Medical School	..	..	..	1	1	4	..	..	..	..	..	..	1
40	Albany Medical College	..	..	..	1	..	2	..	..	1	..	..	..	1
41	**State University of New York College of Medicine at New York City**	..	..	..	..	..	2	..	..	..	..	..	..	..
42	University of Buffalo School of Medicine	..	1	..	4	..	..	..	1	..	..	..	..	..
43	**Columbia University College of Physicians and Surgeons**	1	1	..	1	..	7	..	..	3	..	1	..	..
44	Cornell University Medical College	..	..	..	4	1	6	..	..	..	..	..	2	..
45	**New York Medical College, Flower and Fifth Avenue Hospitals**	..	..	..	1	..	18	1	1	1	..	..	1	..
46	New York University College of Medicine	..	..	..	..	..	2	..	..	..	..	..	..	..
47	University of Rochester School of Medicine and Dentistry	..	..	1	4	..	2	..	..	1	..	..	..	1
48	**State University of New York at Syracuse, College of Medicine**	..	..	..	..	..	3	..	..	..	..	..	..	..
49	University of North Carolina School of Medicine	..	..	..	..	..	..	..	..	1	..	..	..	..
50	**Duke University School of Medicine**	1	..	..	1	..	..	..	2	10	3	..	..	1
51	Bowman Gray School of Medicine	1	..	..	..	..	..	..	..	7	7	..	..	1
52	**University of North Dakota School of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
53	University of Cincinnati College of Medicine	..	..	..	1	..	..	..	..	..	..	..	1	2
54	Western Reserve University School of Medicine	..	1	..	1	..	..	..	..	..	..	..	1	2
55	**Ohio State University College of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
56	University of Oklahoma School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
57	University of Oregon Medical School	..	..	..	2	..	..	..	..	..	..	1	..	..
58	Hahnemann Medical College	..	..	..	4	..	1	2	..	..	..	..	..	..
59	**Jefferson Medical College of Philadelphia**	..	..	..	..	..	1	1	1	2	1	..	1	2
60	Temple University School of Medicine	..	..	..	2	..	..	2	..	1	..	2	..	..
61	University of Pennsylvania School of Medicine	..	..	..	4	..	3	..	1	3	..	..	2	..
62	**Woman's Medical College of Pennsylvania**	..	..	..	6	..	..	..	..	2	..	..	3	1
63	University of Pittsburgh School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
64	**Medical College of South Carolina**	..	..	..	..	..	..	..	..	..	..	..	..	..
65	University of South Dakota School of Medical Sciences	..	1	..	1	..	..	..	..	..	..	..	..	..
66	**University of Tennessee College of Medicine**	3	1	1	1	..	..	..	..	..	1	..	..	..
67	Meharry Medical College	4	..	1	..	..	..	..	..	10	5	..	2	1
68	**Vanderbilt University School of Medicine**	8	..	..	..	..	..	..	..	7	..	..	1	..
69	**Southwestern Medical School of the University of Texas**	..	..	..	..	..	..	..	..	..	..	..	..	..
70	University of Texas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
71	Baylor University College of Medicine	..	3	1	..	..	..	..	..	..	..	..	..	..
72	University of Utah School of Medicine	..	4	..	..	..	..	..	..	..	..	2	..	..
73	University of Vermont College of Medicine	..	..	..	..	..	7	..	..	..	..	..	1	..
74	University of Virginia Department of Medicine	..	..	..	..	..	..	..	..	2	..	..	..	..
75	**Medical College of Virginia**	..	..	..	..	..	1	..	..	1	..	..	..	1
76	University of Washington School of Medicine	..	..	..	..	..	..	..	..	..	..	3	..	..
77	**West Virginia University School of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
78	University of Wisconsin Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..
79	**Marquette University School of Medicine**	..	..	..	3	..	1	..	..	..	..	1	4	..
	Totals	125	28	103	328	80	130	13	55	117	142	20	356	193
80	**University of Alberta Faculty of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
81	University of Manitoba Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
82	**Dalhousie University Faculty of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
83	**Queen's University Faculty of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
84	**University of Ottawa Faculty of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
85	**University of Western Ontario Faculty of Medicine**	..	..	..	..	..	..	..	..	..	..	..	..	..
86	University of Toronto Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
87	**McGill University Faculty of Medicine**	..	..	..	8	..	5	..	..	..	..	..	1	1
88	University of Montreal Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..
89	**Laval University Faculty of Medicine**	..	..	..	..	..	1	..	..	..	..	..	..	..
90	University of Saskatchewan School of Medical Sciences	..	..	..	..	..	..	..	..	..	..	..	..	..
	Totals	..	..	..	8	..	6	..	..	..	..	..	1	1
	Totals	125	28	103	336	80	136	13	55	117	142	20	357	194
		1	2	3	4	5	6	7	8	9	10	11	12	13

* Figures include two freshman classes.

† Figures are for students in beginning premedical year.

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Territories and Possessions	Canada	Foreign	Totals	Marginal Number
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	80	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	90	2
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	72	3
1	2	..	1	1	4	2	3	1	..	2	..	..	..	..	..	1	1	..	..	..	2	1	..	..	..	..	2	2	1	..	..	7	..	2	..	3	4	12	97	4
..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	5
..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	2	..	..	2	..	..	..	..	..	3	62	6
..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	..	81	7
..	..	..	..	1	..	4	1	2	..	..	..	..	..	1	5	..	18	..	..	2	1	..	6	1	..	..	..	1	1	..	..	1	1	..	..	..	..	1	80	8
..	..	1	..	..	5	17	1	1	..	..	..	..	..	1	20	..	24	..	4	..	..	..	16	5	..	..	..	..	..	1	..	..	..	..	..	2	..	..	125	9
1	..	1	..	..	10	..	2	..	1	..	..	..	..	..	7	..	5	1	..	1	1	..	5	..	..	..	1	..	2	..	8	2	..	1	..	1	..	1	90	10
..	..	..	1	..	4	..	2	..	3	1	..	..	..	..	4	..	14	2	..	1	1	..	9	..	3	..	..	1	..	..	3	..	1	..	..	..	5	81	11
..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	73	12
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	79	13
..	..	..	..	..	..	1	1	..	..	1	..	..	..	..	2	..	48	..	..	..	..	..	4	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	73	14
2	..	1	..	..	..	..	5	7	..	..	..	..	..	..	3	..	5	..	..	7	..	..	3	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	93	15
3	3	1	..	..	..	1	3	1	..	2	2	2	..	..	3	3	2	..	..	11	..	2	1	..	..	1	1	2	..	..	..	4	..	4	..	3	..	2	128	16
..	1	..	..	..	1	2	1	..	..	1	..	1	..	..	5	..	14	..	..	5	1	..	2	..	..	..	..	..	..	..	..	..	..	2	..	2	..	..	72	17
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	167	18
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	152	19
111	..	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	120	20
..	114	..	..	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	122	21
..	..	85	..	..	..	..	..	..	..	..	..	..	..	1	3	..	3	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	100	22
..	..	..	127	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	127	23
..	..	3	24	..	..	1	..	..	20	2	..	..	..	..	4	..	10	..	..	1	3	..	1	..	2	..	1	10	1	..	..	..	2	..	..	2	..	2	120	24
..	..	1	..	1	11	6	2	..	3	..	..	..	..	..	2	..	11	2	..	2	..	..	4	..	..	..	..	4	..	..	..	..	1	1	..	..	..	2	75	25
..	..	..	..	..	69	2	..	..	..	..	..	..	..	..	4	..	2	2	..	1	..	..	1	..	1	..	..	4	..	..	..	1	5	..	..	1	..	..	104	26
..	..	..	..	2	..	40	1	1	..	..	1	..	..	2	4	..	4	..	..	..	..	..	1	3	..	..	..	..	..	1	1	..	..	1	..	3	72	27
1	..	..	2	1	..	21	2	2	1	2	..	..	..	..	3	..	23	..	..	5	2	..	6	1	..	2	..	2	1	..	3	2	..	1	..	1	..	2	114	28
..	..	..	..	8	..	73	..	..	..	1	..	..	..	3	2	..	3	..	..	..	..	..	..	8	..	..	..	..	..	..	..	..	..	..	..	2	..	..	120	29
1	1	..	..	..	..	1	184	..	..	1	1	..	..	..	..	..	2	..	1	4	..	..	2	..	..	..	..	..	..	..	..	1	..	..	..	2	..	1	204	30
..	..	..	..	..	..	..	75	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	75	31
..	..	..	..	..	..	..	..	114	..	..	4	..	..	..	..	..	..	..	3	..	1	..	..	..	..	2	..	..	..	..	..	..	1	..	1	..	..	..	127	32
..	..	..	..	..	..	..	..	..	56	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	59*	33
..	..	..	..	..	..	..	..	..	..	45	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	45	34
2	2	1	..	..	..	1	3	6	..	18	5	..	..	3	3	..	4	..	..	29	..	..	5	1	..	..	..	..	..	..	..	11	1	1	..	2	..	1	125	35
2	1	1	..	..	..	..	..	1	2	27	..	..	..	..	3	..	9	..	..	3	2	2	..	1	..	..	1	..	1	..	1	2	..	..	..	1	..	..	87	36
9	3	..	..	..	..	..	..	6	..	5	2	21	..	..	2	1	..	..	..	..	1	1	1	..	..	1	..	1	..	..	..	6	..	..	..	3	1	1	77	37
..	..	..	..	..	..	..	..	..	..	..	1	83	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	86	38
..	..	..	..	1	..	2	1	..	..	..	..	..	..	..	3	..	6	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	24	39
..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	8	..	39	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	..	..	..	2	58	40
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	..	132	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	151	41
..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	68	..	..	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	75	42
1	..	2	..	3	4	..	..	..	1	..	..	..	..	1	19	..	61	1	..	4	..	..	1	..	..	..	1	..	1	..	1	..	..	..	2	..	2	120	43
..	..	..	..	2	..	1	1	1	..	2	..	..	..	..	18	..	37	..	..	2	..	..	2	2	..	..	1	..	1	..	1	..	..	..	..	..	1	85	44
..	..	..	..	1	1	2	1	..	..	..	..	..	..	..	27	..	59	..	..	3	..	..	4	2	..	..	1	1	..	..	..	..	..	..	1	..	1	129	45
..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	11	..	123	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	139	46
1	..	..	..	1	1	5	..	1	..	1	..	..	..	..	9	..	29	..	..	1	..	1	3	1	..	..	..	..	..	..	..	1	1	3	1	2	..	..	71	47
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	70	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	76	48
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	56	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	58	49
..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	7	..	5	32	..	2	1	..	1	..	4	..	2	..	..	..	1	..	2	..	..	..	1	79	50
..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	1	..	1	24	..	..	..	..	2	..	7	..	2	..	..	..	..	1	..	..	..	..	..	..	56	51
..	..	..	..	..	..	..	..	4	..	..	1	..	..	..	..	..	..	..	34	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	39	52
..	..	6	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	76	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	90	53
1	..	..	..	..	..	3	1	..	..	..	..	..	..	..	2	..	8	..	..	47	..	..	8	..	..	..	..	..	..	..	1	1	2	..	1	..	2	82	54
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	149	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	149	55
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	101	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	101	56
..	..	..	..	..	..	..	1	1	..	..	4	..	1	..	..	..	1	..	..	..	..	66	..	..	..	..	..	..	..	..	..	4	..	..	..	1	..	1	83	57
..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	13	..	2	..	..	2	..	..	77	1	..	..	..	..	..	..	..	..	1	..	1	..	..	..	105	58
..	..	..	..	..	..	2	..	..	2	..	..	..	..	..	22	..	6	..	1	2	1	..	109	2	1	..	..	..	..	..	1	..	10	1	..	..	..	1	170	59
..	..	..	..	1	..	1	..	..	..	1	..	..	..	..	14	1	11	1	..	3	..	..	84	1	..	1	..	..	2	..	..	..	..	..	5	..	2	135	60
..	..	..	..	..	3	3	..	2	1	..	..	..	..	1	8	..	6	3	..	3	1	..	83	..	..	..	..	..	..	..	1	1	4	..	..	1	..	1	135	61
1	..	1	..	1	..	1	1	..	..	..	..	..	..	..	5	1	5	..	..	2	..	..	18	..	..	..	..	1	..	..	2	..	..	..	..	2	..	2	50	62
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	63
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	70	..	..	..	..	..	..	..	..	..	..	..	..	..	70	64
..	..	..	..	..	..	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	27	..	..	..	..	..	..	..	..	..	..	..	..	32	65
..	..	2	..	..	..	..	..	..	4	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	180	..	..	..	..	..	..	..	..	..	..	..	196	66
..	..	..	5	..	3	..	2	..	4	1	..	..	..	..	1	..	2	4	..	2	..	..	1	..	3	..	5	1	..	..	7	..	..	..	..	..	1	65	67
..	..	5	..	..	..	..	..	1	2	2	..	..	..	..	1	..	1	..	..	..	1	..	..	..	1	..	22	1	..	..	..	..	..	..	..	..	..	..	53	68
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	105	..	..	..	..	..	..	..	..	..	..	105	69
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	174	..	..	..	..	..	..	..	..	..	..	174	70
..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	82	..	..	1	..	..	2	..	..	..	94	71
..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	47	..	..	..	..	..	..	..	1	55	72
..	..	..	..	5	..	5	..	..	..	..	..	..	..	6	1	5	..	..	..	..	..	..	..	1	..	..	..	..	18	..	..	..	..	..	..	..	2	51	73
..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	62	..	3	..	..	..	..	..	72	74
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	1	..	..	77	..	..	..	..	..	..	..	84	75
..	..	..	..	..	..	..	..	1	..	..	3	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	64	..	..	1	1	..	..	75	76
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	31	77
..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	84	..	..	..	..	87	78
..	..	1	..	..	..	..	2	7	..	..	3	..	..	..	2	..	7	..	..	4	..	..	3	..	..	1	..	1	..	..	..	2	..	58	..	3	..	1	104	79
137	129	115	160	27	117	209	299	165	101	124	28	107	4	19	274	22	886	133	43	378	121	75	504	32	92	37	222	389	64	21	170	118	66	168	7	54	7	64	7,441	
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	58	..	58	80
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	67	3	70	81
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	58	1	59	82
..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	59	..	64†	83
..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	4	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	53	..	60	84
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	59	1	60	85
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	123	..	124†	86
..	..	1	..	1	1	2	..	..	1	..	..	..	..	1	2	..	12	..	..	1	..	..	1	1	..	..	..	..	2	..	3	..	1	..	..	..	63	8	116	87
..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	115	1	117	88
..	..	..	..	2	..	3	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	92	2	103†	89
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	..	32	90
..	..	1	..	5	1	6	..	..	..	1	..	..	..	2	3	..	21	..	..	2	..	..	2	1	..	..	..	..	..	2	..	3	..	2	..	..	779	16	863	
137	129	116	160	32	118	215	299	165	101	125	28	107	4	21	277	22	907	133	43	380	121	75	506	33	92	37	222	389	64	23	170	121	66	170	7	54	786	80	8,299	
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	

two years of premedical study in college. Six states and Puerto Rico require three years. California in 1951 enacted a bill that requires two years of college for present medical graduates and three years for graduates after Jan. 1, 1955.

Seventy-eight of the 79 medical and basic science schools in the United States now require three or more years of college study. The remaining school will initiate this requirement for classes entering after September, 1953. Six of the Canadian schools have a similar requirement. Ten schools in the United States and Canada: Georgetown, Chicago Medical School, Johns Hopkins, Tufts, Cornell, New York Medical College, Vanderbilt, University of Texas, Montreal, and Laval require a bachelor's degree. Georgetown makes an exception in the case of veterans who are admitted after 90 semester hours of college education. Cornell and Vanderbilt will accept students after three years of college, provided their colleges will grant them a bachelor's degree on successful completion of the first year of medical school.

Baccalaureate degrees were held by 5,205, or 70% of freshmen entering medical schools in the United States during the past year; 547, or 7.4%, had completed four years of college but had not received degrees; 1,608, or 21.5%, had had three years; only 81, or 1.1%, had only two years of college.

College Record of 1951 Freshman Class

For several years this report has called attention to the fact that serious misconceptions exist in many quarters concerning the qualifications that a student must possess to gain admission to medical school. In an effort to correct statements that have appeared in the lay press to the effect that students who do not maintain a straight "A" average in college have little or no chance of being admitted to medical school, data have been presented in previous years that showed that considerably less than half of the students admitted to medical school maintained an "A" average and that between 10% and 20% of those admitted had college averages of "C" or lower.

For this year's report, 72 of the 79 medical and basic science schools in the United States were able to provide information as to the college records of the freshmen entering medical school during 1951-1952. Fifty-four of the 72 schools admitted one or more students with college averages of less than "B minus." The highest number in

TABLE 17.—*Residence of Freshman Students in Medical and Basic Science Schools in the United States and Canada, 1951-1952*

	Home State	Other State	Territories and Possessions	Canadian	Foreign	Totals
United States						
Medical College of Alabama	80	0	0	0	0	80
University of Arkansas School of Medicine	90	0	0	0	0	90
University of California Medical School	69	2	0	0	1	72
College of Medical Evangelists	32	46	3	4	12	97
University of Southern California School of Medicine	59	10	0	0	0	69
Stanford University School of Medicine	48	11	0	0	3	62
University of Colorado School of Medicine	65	16	0	0	0	81
Yale University School of Medicine	22	57	0	0	1	80
Georgetown University School of Medicine	12	113	0	0	0	125
George Washington University School of Medicine	18	70	1	0	1	90
Howard University College of Medicine	14	62	0	0	5	81
Emory University School of Medicine	33	40	0	0	0	73
Medical College of Georgia	79	0	0	0	0	79
Chicago Medical School	5	67	1	0	0	73
Stritch School of Medicine of Loyola Univ.	47	46	0	0	0	93
Northwestern University Medical School	48	75	3	0	2	128
University of Chicago, The School of Med.	22	48	2	0	0	72
University of Illinois College of Medicine	167	0	0	0	0	167
Indiana University School of Medicine	147	4	0	0	1	152
State University of Iowa College of Medicine	111	9	0	0	0	120
University of Kansas School of Medicine	114	5	0	0	3	122
University of Louisville School of Medicine	85	14	1	0	0	100
Louisiana State Univ. School of Medicine	127	0	0	0	0	127
Tulane Univ. of Louisiana School of Medicine	24	102	2	0	2	130
Johns Hopkins University School of Medicine	11	62	0	0	2	75
University of Maryland School of Medicine	69	34	1	0	0	104
Boston University School of Medicine	40	28	1	0	3	72
Harvard Medical School	21	90	1	0	2	114
Tufts College Medical School	73	45	2	0	0	120
University of Michigan Medical School	184	17	2	0	1	204
Wayne University College of Medicine	75	0	0	0	0	75
University of Minnesota Medical School	114	12	1	0	0	127
University of Mississippi School of Medicine	59	0	0	0	0	59
University of Missouri School of Medicine	45	0	0	0	0	45
St. Louis University School of Medicine	18	104	2	0	1	125
Washington University School of Medicine	27	59	1	0	0	87
Creighton University School of Medicine	21	51	3	1	1	77
University of Nebraska College of Medicine	83	2	0	0	1	86
Dartmouth Medical School	0	24	0	0	0	24
Albany Medical College	39	17	0	0	2	58
State University of New York College of Medicine at New York City	132	18	0	0	1	151
University of Buffalo School of Medicine	63	10	2	0	0	75
Columbia University College of Physicians and Surgeons	61	55	2	0	2	120
Cornell University Medical College	37	47	0	0	1	85
New York Medical College, Flower and Fifth Avenue Hospitals	61	66	1	0	1	129
New York University College of Medicine	123	16	0	0	0	139
University of Rochester School of Medicine and Dentistry	29	40	2	0	0	71
State University of New York at Syracuse College of Medicine	70	6	0	0	0	76
University of North Carolina School of Med.	56	2	0	0	0	58
Duke University School of Medicine	32	46	0	0	1	79
Bowman Gray School of Medicine	24	32	0	0	0	56
University of North Dakota School of Med.	34	5	0	0	0	39
University of Cincinnati College of Medicine	76	12	1	1	0	90
Western Reserve University School of Med.	47	32	1	0	2	82
Ohio State University College of Medicine	149	0	0	0	0	149
University of Oklahoma School of Medicine	101	0	0	0	0	101
University of Oregon Medical School	66	15	1	0	1	83
Hahnemann Medical College	77	27	1	0	0	105
Jefferson Medical College of Philadelphia	109	60	0	0	1	170
Temple University School of Medicine	84	44	5	0	2	135
University of Pennsylvania School of Med.	83	50	1	0	1	135
Woman's Medical College of Pennsylvania	13	33	2	0	2	50
University of Pittsburgh School of Medicine	100	0	0	0	0	100
Medical College of South Carolina	70	0	0	0	0	70
University of South Dakota School of Medical Sciences	27	5	0	0	0	32
University of Tennessee College of Medicine	180	16	0	0	0	196
Meharry Medical College	5	59	0	0	1	65
Vanderbilt University School of Medicine	22	31	0	0	0	53
Southwestern Medical School of the University of Texas	105	0	0	0	0	105
University of Texas School of Medicine	174	0	0	0	0	174
Baylor University College of Medicine	82	10	2	0	0	94
University of Utah School of Medicine	47	7	0	0	1	55
University of Vermont College of Medicine	18	31	0	0	2	51
University of Virginia Department of Med.	62	10	0	0	0	72
Medical College of Virginia	77	7	0	0	0	84
University of Washington School of Medicine	64	9	1	1	0	75
West Virginia University School of Medicine	31	0	0	0	0	31
University of Wisconsin Medical School	84	3	0	0	0	87
Marquette University School of Medicine	58	42	3	0	1	104
Totals	5,130	2,188	52	7	64	7,441
Canada						
University of Alberta Faculty of Medicine	0	0	0	58	0	58
University of Manitoba Faculty of Medicine	0	0	0	67	3	70
Dalhousie University Faculty of Medicine	0	0	0	58	1	59
Queen's University Faculty of Medicine	0	5	0	59	0	64
University of Ottawa Faculty of Medicine	0	7	0	53	0	60
University of Western Ontario Faculty of Medicine	0	0	0	59	1	60
University of Toronto Faculty of Medicine	0	1	0	123	0	124
McGill University Faculty of Medicine	0	45	0	63	8	116
University of Montreal Faculty of Medicine	0	1	0	115	1	117
Laval University Faculty of Medicine	0	9	0	92	2	103
University of Saskatchewan School of Medical Sciences	0	0	0	32	0	32
Totals	0	68	0	779	16	863
Totals	5,130	2,256	52	786	80	8,304

any one school was 135. The total number of such students was 1,112, or 16.5% of the freshmen in the 72 schools reporting. Two of the 72 schools reported no students with college averages of better than "B plus." One basic science school reported that all its entering students had records better than "B plus." The total number of such students was 1,985, or 29.4% of the freshmen in the 72 schools reporting.

This study indicates that approximately 30% of the students entering medical school last year had "A" averages, approximately 55% had "B" averages, and slightly more than 15% had averages of "C" or lower in their college work. Compared with the freshman class of 1950-1951, there were 10% fewer "A" students, 12% more "B" students, and 2% fewer "C" students.

Official statistics compiled by the Association of American Medical Colleges from data supplied by all medical schools in the United States show that there was a drop of more than 2,000 in the total number of students who applied for admission to the 1951-1952 freshman class as compared with the preceding class.[1] This is the second successive year in which there has been a drop of more than 2,000 in the total number of applicants.

A total of 19,920 persons applied for admission to the 1951-1952 freshman class. As already noted, the number of students who actually enrolled in the 1951-1952 class was 7,441. From these figures it can be computed that one out of every 2.68 applicants was successful in entering medical school. In the preceding year the ratio was one out of every 3.11 applicants, and for the 1949-1950 class the ratio was one out of every 3.47 applicants.

The study of the Association of American Medical Colleges reveals that approximately 30% of those applying for admission to the 1951-1952 class had been rejected in one or more previous years. Thirty per cent of this group gained admission last year. Of those applying to medical school for the first time, 42% were successful in gaining admission to the 1951-1952 class. These figures, together with the statistics concerning the college records of accepted students, should dispel any remaining misconception that may exist to the effect that the medical schools have raised their standards so high and made it so difficult for applicants to gain admission that only one out of every 10, 15, or 20 applicants, and then only the applicant with a brilliant college record, can enter medical school.

As pointed out last year, these studies should also alert the medical schools, if their experience has not already done so, to the fact that the unusually large pool of able applicants with which most medical schools have been favored since the end of the war definitely appears to be shrinking. This trend is of particular importance to those schools that restrict admission to residents of a single state. If the trend continues, as seems probable, these schools will have great difficulty in finding suitable students to fill all their available places unless they relax their restrictions.

The 1952 Freshman Class

The 7,441 freshmen enrolled in the medical schools last year constitute the largest class ever admitted to the medical schools of the United States. It included 1531, or 26%, more students than the average for the five prewar freshman classes. Figures that have been submitted by the schools indicate that the 1952 freshman class will be approximately the same size. It would thus appear that following the period of unprecedented expansion of medical school facilities during the seven years following the end of World War II, the coming year will see at least a temporary levelling off in freshmen enrollments. Further increases may be expected when several new schools that are now in the final planning stage open and when other established schools complete programs of expansion they now have under way. It should be noted that it will be another three years before the record size of last year's freshman class is fully reflected in the figures for the total enrollment and the number of graduates. Significant increases in these figures will continue to be recorded for at least another three years, regardless of further expansion that may occur.

TABLE 18.—*Ratio of Freshman Medical Students to State Populations, 1951-1952*

Numbers of students per 100,000 of population [1] in the medical and basic science schools of the United States

*Wyoming	2.4	Oregon	4.9
*Nevada	2.5	Wisconsin	4.9
*Maine	2.9	Maryland	5.0
California	3.1	Texas	5.0
Missouri	3.1	Washington	5.0
*New Mexico	3.2	Virginia	5.1
North Carolina	3.3	Iowa	5.2
West Virginia	3.3	Pennsylvania	5.3
*Idaho	3.4	Arkansas	5.4
New Hampshire	3.5	Oklahoma	5.4
*Arizona	3.7	Minnesota	5.5
Kentucky	3.9	Vermont	5.5
Alabama	4.1	*New Jersey	5.6
*Delaware	4.1	South Dakota	5.6
Georgia	4.1	Louisiana	5.9
Illinois	4.1	New York	5.9
*Rhode Island	4.1	Colorado	6.0
*Florida	4.2	Connecticut	6.5
South Carolina	4.3	Kansas	6.7
Massachusetts	4.4	Tennessee	6.7
Michigan	4.7	North Dakota	6.9
*Montana	4.7	District of Columbia	7.0
Ohio	4.7	Nebraska	8.0
Mississippi	4.8	Utah	9.2
Indiana	4.9		

* State with no medical school.

1. Provisional Estimate of Population, July 1, 1950, P-25, No. 50, May 9, 1951, Washington, D. C.

By June of this year the schools had already selected 7,084 students. Among them were 1,093 male veterans (15.4%, or 7.5% less than last year), 5,608 other men and 383 women. There were three women veterans. Canadian medical schools expect an enrollment of 898 freshmen, 35 less than last year. These schools up to June had selected 643 students, 603 men and 40 women.

Preparation for General Practice

The medical schools are continuing to give attention to the problem of educating physicians who will have a primary interest in serving as family physicians as well as to the education of physicians for special practice, teaching, research, and administration. The great majority of schools report that they are sponsoring one or more programs designed to interest and prepare students for careers in general practice. As reported last year, several schools design their entire educational program with the primary purpose of preparing students adequately for general practice.

1. Stalnaker, J.: Study of Applicants for Admission to United States Medical Colleges—Class Entering in 1951-1952, J. Med. Educ. **27**: 39-43 (Jan.) 1952.

Special activities include preceptorship programs, which are discussed in another section of this report, home medical service, and family advisor programs, courses or series of lectures on the problems and opportunities of general practice by outstanding general practitioners, and the organization of general medical clinics in which the conditions of general practice are simulated. A number of schools attempt to develop the students' interest through a counseling program. Other schools have affiliated with groups of rural hospitals and have found that recent graduates have been attracted to practice in the communities in which these hospitals are located. Twenty-four schools are sponsoring internships and 18 are sponsoring residencies in their affiliated hospitals that are specifically designed for prospective general practitioners.

Preceptorship Programs

The trend for schools to experiment with preceptorships continues. The common objective of these programs is to expose the student in his formative years to the problems and challenge of general practice and to the influence of outstanding physicians whose careers are devoted primarily to service in the practice of medicine. During the last year nine additional schools established

TABLE 19.—*Medical Schools Requiring an Internship*

United States
College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Chicago Medical School
University of Minnesota Medical School
Duke University School of Medicine [1]
Canada
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Ottawa Faculty of Medicine
Laval University Faculty of Medicine
University of Montreal Faculty of Medicine

1. Degree not withheld until internship completed.

preceptorship programs, although in several instances the program will not become operative until the coming academic year. Three schools that formerly offered preceptorships discontinued them. The net result of these changes is to increase the number of schools with preceptorship programs from 19 to 25. The increasing interest of the medical schools in this type of program is revealed by the fact that two years ago only 13 schools were offering preceptorships. Table 21 lists those schools that have established preceptorship programs.

In nine schools the preceptorship is required; in the remaining 16 it is elective. The duration of the preceptorship varies from two weeks to three months and averages six weeks. Fifteen schools reported that last year a total of 577 students served preceptorships. Twelve schools stated that the faculty in general is satisfied with the preceptorship program. The other schools reported that their experience has been too limited to form the basis of an opinion or offered no comment. Presumably the three schools that discontinued the preceptorship were dissatisfied with the program.

The preceptorship as a part of the curriculum of modern medical schools is obviously still in a period of trial and study. Very few schools have had experience with this type of assignment for more than two or three years. It would seem clear, therefore, that another three or four years, at least, will be required before decisions can be reached as to whether it constitutes a worth-while educational experience for students and whether it can be satisfactorily administered and supervised by the medical schools.

TABLE 20.—*Medical Licensing Boards Requiring a One Year Internship* *

Alabama	Nevada	Vermont
Arizona	New Hampshire	Washington [1]
California	New Jersey [1,3]	West Virginia
Colorado	North Dakota	Wisconsin
Delaware [1]	Oklahoma [1]	Wyoming
District of Columbia	Oregon	Alaska [4]
Idaho	Pennsylvania [1]	Guam
Illinois [1]	Rhode Island [1]	Hawaii
Iowa [1]	South Dakota	Puerto Rico [1]
Kentucky	Utah	Virgin Islands
Michigan [1,2]		

* Some additional states require the internship for graduates of medical faculties abroad and from reciprocity or endorsement applicants.

1. Internship must be a rotating service.
2. Twenty-four month mixed or straight internship acceptable.
3. Two year residency in a specialty or one year of postgraduate work accepted.
4. Active practice for four years accepted in lieu of internship.

Major Developments in the Medical Schools

Information concerning any major developments that would be of general interest was again requested of each medical school. These developments, as in previous years, are summarized in the following categories: curriculum, organization and administration, construction, planning, and miscellaneous.

Continuing interest in improvement of the medical curriculum was indicated again this year. Ten schools reported either that major curricular changes were instituted last year or that extensive studies of the curriculum were being made. Schools reporting such changes or contemplated changes were Arkansas, Stritch, Louisville, Albany, New York Medical College, North Carolina, Ohio State, Woman's Medical College, Harvard, and Vanderbilt. Again, as in the past two years, there were reported decreases in the amount of didactic teaching and efforts to develop better integration of teaching at all levels.

TABLE 21.—*Medical Schools Offering Preceptorship Programs, 1951-1952*

University of Arkansas	University of Nebraska
College of Medical Evangelists	Albany Medical College
University of California	University of Buffalo
Yale University	Duke University
Emory University	University of Oklahoma
Stritch School of Medicine	University of Oregon
Indiana University	University of Pennsylvania
State University of Iowa	University of Tennessee
University of Kansas	University of Texas
University of Louisville	University of Vermont
Boston University	University of Washington
Tufts College Medical School	University of Wisconsin
Wayne University	

Significant changes in the organization and administrative arrangements of several schools were described. Illinois is to establish a new department of medical social work, and Albany has instituted a course in medical ethics, economics, and practice. The Pennsylvania State Legislature has turned over to Pittsburgh responsibility for operation of the Western Psychiatric Institute and Clinic, a state center for teaching, research, and training.

A state appropriation of $1,250,000 annually, for the financing of this center, will be supplemented by grants from local foundations and patient fees, which together will provide an additional $150,000. Virginia, beginning in 1952 will require each senior to spend eight weeks in elective work such as research, clerkships in other medical schools, preceptorships, and assistantships in public health and in industrial medicine. At North Carolina selection of the clinical faculty has been largely completed. South Dakota organized a clinical clerkship program specifically aimed at the teaching of physical diagnosis. Stritch, North Carolina, and Vanderbilt have instituted home care and family study programs. North Carolina also plans a general practice outpatient clinic for senior students. Utah has organized a division of graduate and postgraduate education to serve physicians in the entire intermountain area.

In order to provide a more accurate estimate of the scope of construction programs, the schools this year were asked to indicate separately the amounts spent for projects completed in the past year and amounts allocated for projects that were initiated during the 1951-1952 academic year. In the present report an effort has been made to exclude figures and projects that have been published in other years.

A total of $21,649,411 was reported spent for projects completed in the past year. New medical school buildings or additions to existing buildings were completed in Alabama, Virginia, Cincinnati, North Carolina, and Tennessee. Additions to existing clinical facilities or new clinical facilities were finished at Kansas, Wisconsin, Virginia, St. Louis University, Dartmouth, Cincinnati, Oklahoma, Woman's Medical, Tulane, and South Carolina. New laboratory quarters were constructed or existing facilities were remodeled by the College of Medical Evangelists, Yale, Temple, Texas, Virginia, and Utah. New facilities for research were occupied at California (San Francisco), Temple, Duke, Tennessee, St. Louis University, and Southern California. Additions to existing research quarters were made at Duke and St. Louis University.

Major new projects, totaling $59,991,324 in cost, were initiated by the schools in the past year. New medical school buildings or additions to present buildings were begun at the College of Medical Evangelists, Medical College of Georgia, Illinois, Indiana, New York University, North Dakota, South Carolina, Southwestern, Louisiana State, Meharry, and Marquette. New clinical facilities or expansion of existing ones were started at Arkansas, Medical College of Georgia, Wayne, Oklahoma, Jefferson, Texas, University of Washington, and North Carolina. New laboratory quarters were started at the Univeristy of Washington and Hahnemann and new research facilities at Indiana, Hahnemann, and Ohio. Vanderbilt has begun construction of a building to house graduate portions of the university departments of physics, biology, and chemistry. This building connects with the medical school.

The total amounts expended by the schools for major projects completed last year and for new projects initiated, for which figures were submitted, is $81,640,735. Expenditures for major construction, reported in the 1950-1951 Educational Number, with figures for one-third of all projects reported, amounted to $60,000,000. Similar expenditures for 1949-1950 were in excess of 100 million dollars, with figures for only one-half of all projects reported. It is apparent then that the grand total spent by the medical schools for major new construction in the past three years is well in excess of $241,440,000. It would be entirely erroneous to assume that all medical schools have participated equally in these expansion programs. On the contrary, some schools have had a relatively enormous share of the funds while others have had very little. Nevertheless, it is clear that the expansion in medical school facilities that has taken place in the three years is unequalled in any similar period in the history of American medicine.

Other developments include a gift of $1,500,000 to the Medical College of Virginia for the establishment of a scholarship fund. This will provide an annual income of $55,000, which will be used for various types of scholarships both at the undergraduate and graduate level. The New York Medical College has received a bequest of $411,000, which will be used for the support of the department of medicine. Tulane plans to embark on a campaign for an endowment and building fund for the medical school, and Columbia will continue to expand its development program. It is anticipated that the city of Louisville will soon float a $1,500,000 bond issue to finance expansion of the medical school of the University of Louisville, and Minnesota will request $400,000 to finance an endowed professorship for research on hypertension and related conditions. Boston University has organized a planning board to prepare over-all building plans for its medical center. Acquisition of property on which the center will be built has already begun. South Dakota is developing a medical school endowment fund in collaboration with the state medical association.

Plans for an experiment in the teaching of military and disaster medicine were completed during the year, and pilot programs will be instituted this year at five schools, Illinois, California (San Francisco), Cornell, Vanderbilt, and Buffalo. Details of this program are given in the section on medical education and national defense.

Vacancies on Instructional Staffs

The number of vacant or newly created full-time faculty positions for the year 1952-1953 that the medical schools had been unable to fill up to June, 1952, was the lowest for the four years that these figures have been compiled. For the schools in the United States the total for the coming year is 195. In 1951 it was 235, in 1950, it was 281, and in 1949 it was 441.

Diehl, West, and Barclay [1] in a recent study of medical school faculties carried out jointly by the Health Resources Advisory Committee and the Association of American Medical Colleges, reported that in February, 1951, the medical schools had 3,933 faculty members with full-time appointments. With this figure as a base, it may be estimated that the 195 vacant full-time positions reported here constitute approximately 5% of the total full-time positions offered by the medical schools.

1. Diehl, H. S.; West, M. D., and Barclay, R. W.: Medical School Faculties in the National Emergency, J. M. Ed. **27**: 233-243 (July) 1952.

Twenty-seven schools report no unfilled positions. Forty-one schools had a total of 104 unfilled positions in the preclinical departments and 28 reported 91 vacancies in the clinical departments. Last year there were 157 vacancies in the preclinical departments and 78 in the clinical departments. It is not known exactly how many of the unfilled positions represent posts that have been established only recently and for which there has not yet been sufficient time to make appointments. Information is available, however, that would indicate that many of the vacant positions are in this category. Thus it is known that 35 of the vacancies in the clinical departments are accounted for by three schools that have until recently depended primarily on part-time teachers for most of their clinical instruction. With larger budgets now available, these schools are at present engaged in developing a nucleus of full-time teachers in most of their clinical departments.

TABLE 22.—*Total Number of Unfilled Full-Time Positions by Departments in the Medical and Basic Science Schools of the United States, 1952-1953*

	Number of Unfilled Positions
Preclinical Departments	
Physiology	24
Pathology	22
Anatomy	21
Microbiology	15
Pharmacology	11
Physiological Chemistry	11
Total	104
Clinical Departments	
Psychiatry	16
Preventive Medicine and Public Health	13
Internal Medicine	12
General Surgery	10
Obstetrics and Gynecology	10
Pediatrics	8
Ophthalmology	4
Radiology	4
Neurological Surgery	3
Physical Medicine and Rehabilitation	3
Dermatology	2
Orthopedic Surgery	2
Otolaryngology	2
Anesthesiology	1
Urology	1
Total	91
Totals	195

The numbers of unfilled positions are shown by departments in table 22. Among the preclinical departments, anatomy, which last year had the largest number of vacancies, now ranks third. There has been no other change in the relative number of vacancies in the preclinical departments, although fewer actual vacancies are reported for all departments. In the clinical departments, vacancies in psychiatry, general surgery, and public health and preventive medicine are more numerous and those in pediatrics and anesthesiology are fewer than a year ago. Otherwise no significant changes are noted.

Financial Support of Medical Schools

For the sixth successive year since the annual compilation of financial data provided by the medical schools was instituted, the medical schools report a major increase in the funds available to them for their operations. For the academic year 1952-1953, the total of the budgets of the medical and basic science schools in the United States is approximately $80,885,000. This sum represents an increase of $6,535,000 in the past year and an increase of $13,385,000 in the past two years. During the six year period that these figures have been compiled the budgets of the medical schools have been increased by more than $33,000,000.

The total of $80,885,000 does not include research grants and special teaching grants from outside agencies or any significant portion of the cost of operating the teaching hospitals affiliated with the medical schools. It does include a total of approximately $3,650,000 that the medical schools will spend for certain activities in their affiliated hospitals. This sum, which is $400,000 greater than in the previous year, is largely made up of salaries of professional and technical personnel on hospital staffs, the cost of operating special laboratories and, in a few instances, contributions to the operating budgets of hospitals and dispensaries used by the medical schools for teaching purposes. As in previous years, no attempt has been made to compute the direct and frequently very substantial financial contributions that a number of teaching hospitals make to the educational programs of their affiliated medical schools or to estimate the value of the services contributed by the large number of unpaid members of the teaching staffs of the medical schools. When a charge for general university administration is made against a medical school, this charge has been subtracted and is not included in the total given above. Also not included are the costs of operating the medical library in two schools and a variety of items, which total slightly more than $1,600,000 for minor structural alterations, postgraduate education, special institutes, and other activities not included in the regular medical school budgets. The cost of new major construction has also been eliminated from the above total. As already noted in the section on major developments in the medical schools, the schools during the past year were engaged in constructing new facilities of various types costing about 81 million dollars.

The schools estimate that receipts from tuition and other fees during the coming year will total $17,400,000, or 21.5%, of their budgets. Last year tuition fees provided $16,300,000, or 21.9%, of the schools' budgets. The number of schools unable to match student fees dollar for dollar with funds from nonstudent sources in their basic budgets decreased from eight to six. In at least three of these schools, the situation is not so unfavorable as the figures would suggest, since in each instance hospital funds that do not appear in the medical school budget provide support for comparatively large full-time clinical faculties.

The median budget of the four year medical schools for the coming year will be $953,000. Thirty-three schools, as compared to 30 last year and 24 the year before, report budgets of over one million dollars for the coming year. Six of these schools will have budgets of over two million. Last year four schools were in this category. Eleven four year schools, as compared with 14 last year, report budgets of less than $500,000. This year for the first time no four year school has a budget of less than $400,000.

In addition to the funds discussed in the foregoing paragraphs, the schools have estimated that during the academic year 1952-1953 they will receive from outside

agencies a total of $33,200,000 in grants for research and $5,000,000 in grants for special teaching activities. Funds received in these categories last year totaled $33,800,000 and $5,084,000 respectively. All schools received funds in both categories. Among the four year schools, the range in grants for research varied from

TABLE 23.—*Recapitulation of Estimated Funds Available to Medical Schools, 1952-1953*

Funds for construction and operation of major clinical facilities not included	
Budgeted funds and appropriations	$ 80,885,000
Funds for miscellaneous projects	1,600,000
Research grants from outside agencies	33,200,000
Teaching grants from outside agencies	5,000,000
	$120,685,000

$38,000 to $2,230,000. Twelve schools received more than one million dollars in grants for research, and 10 other schools received between $500,000 and one million dollars. Last year the schools in these categories numbered 7 and 12 respectively. Among the four year schools special grants for teaching ranged from $23,000 to $405,000.

Table 23 recapitulates the funds that the medical schools will expend during the coming academic year in support of their activities exclusive of new construction and the operation of major clinical facilities. It is important that it be understood that the total of $120,685,000 shown in the table will support many activities in addition to the instruction of undergraduate medical students. A modern medical school conducts a broad program of instruction, research, and service, as Deitrick and others have emphasized. This is brought out in part by the section of this report on the responsibilities of medical schools for other students, in which it is clearly shown that medical schools are providing directly for the educational needs of large numbers of other students in addition to undergraduate medical students. Almost one-third of the total sum that will be expended by the medical schools next year is definitely earmarked for research and a smaller portion for the support of clinical services. Additional direct and indirect support of research and clinical services will undoubtedly be provided by the basic budgets of many schools, although the actual amount cannot be estimated.

To what extent the steady increase in funds that have been made available to the medical schools in the past six years has lessened the financial pressures on the schools is difficult of precise estimation. There can be no question that it has brought substantial relief to many schools that a few years ago were faced with grave financial problems. At the same time there has been a progressive decrease in the value of the dollar, so that all of the increase in funds cannot be counted as net gain. Further, many schools are now supporting new or expanded activities, so that a comparison with the situation of five or six years ago cannot be made simply by considering the amounts of money available to the schools in the two periods.

It may be estimated that the total of the funds available to the medical schools for the year 1952-1953 is approximately 45 million dollars greater than the schools' total expenditures in 1947-1948, when the Surgeon General's Committee on Medical School Grants and Finances made its study.

Even when appropriate allowance is made for inflation and expanded programs, it is clear that the medical schools have made great gains financially and that as a group the medical schools of the country are today better supported than at any time in their history. As pointed out last year, some schools have fared better than others. A few schools are still operating under the serious handicap of totally inadequate budgets. Unfortunately, it must be admitted that in several of these instances the responsibility for this unfavorable situation rests primarily on the medical schools themselves or their parent universities, in that they have either failed to develop programs that inspire confidence that additional support will be used effectively or they have up to now not exerted themselves so vigorously or effectively as their sister institutions in their efforts to secure additional funds. In several such schools, however, there are signs that, spurred by the successful efforts of other schools that have demonstrated vigor, imagination, and resourcefulness in seeking a solution to their financial problems, these schools will shortly attack their problems with new hope and resolution.

Uncertainty as to future income and future costs still plagues the medical schools, as it does all enterprises in this period of inflation and uncertain prosperity. Clearly, however, great progress has been made, and it does not seem unrealistic to hope that the continuing efforts of the medical schools on their own behalf and the activities of such groups as the National Fund for Medical Education and the American Medical Education Foundation will insure for medical education in this country reasonably adequate and stable financial support in the years ahead.

Student Fees

Resident tuition fees in the 72 medical schools and the 7 schools of the basic medical sciences in the United States for the academic year 1952-1953 will range from $97 to $968, except for one school, which will charge a fee of $1,289. The median fee will be $689, as compared

TABLE 24.—*Range of Annual Fees in Medical and Basic Science Schools in the United States and Canada*

	1951-1952 Number of Schools		1952-1953 Number of Schools	
	United States	Canada	United States	Canada
Less than $100	1	..	1	..
$100 to 199	3	..	3	..
200 to 299	7	..	5	..
300 to 399	8	6	8	4
400 to 499	10	5	11	5
500 to 599	7	..	7	2
600 to 699	5	..	5	..
700 to 799	14	..	6	..
800 to 899	23	..	26	..
900 to 999	..	..	6	..
1,000 and over	1	..	1	..
Total	79	11	79	11

with $660 last year, and the average fee will be $623, as compared with $596 in 1951-1952. Twenty-five schools have announced increases in fees ranging from $12 to $150. The average tuition fee now stands at 165% of the average tuition fee in 1939-1940, which was $378. As pointed out in the preceding section, however, student fees will provide only 21.5% of the cost of operating the medical schools during the forthcoming year.

In table 24 the 90 medical schools and schools of the basic medical sciences in the United States and Canada have been arranged in groups according to the fees that will be charged resident students for the session 1952-1953. This table also gives comparable statistics for the year 1951-1952. The figures is this table represent one-fourth of the total fees charged students for the four years of the medical course, including tuition fees and minor charges such as those for matriculation, breakage, diploma, and graduation. Thirty-five schools in the United States make an additional charge for nonresident students. In 33 schools these charges range from $80 to $600. One school charges nonresident students an additional fee of $1,100 and another an additional fee of $2,130.

Within the last year or two it has been suggested in several quarters that one solution to the financial problems of the medical schools would be for the schools to charge a tuition fee that would cover the full cost of a student's education. This suggestion appeared so unwise and unsound that the Council has published [1] a statement pointing out the dangers of such plans and condemning their adoption.

Cost of Attending Medical School

Two years ago the medical schools reported that the minimum financial outlay required of a student for an academic year while attending medical school ranged from $567 to $2,252, with a median of $1,473. The average cost to a student for one year was reported to range from $800 to $2,500 with a median of $1,800. No subsequent studies of these costs have been made. It seems reasonable to estimate however, that increases in tuition fees and the rise in living costs during the last two years have raised these figures in the vicinity of 10%.

Private and Governmental Medical Schools

The medical schools in the United States are listed in table 25 according to the nature of their ownership. There were no changes of ownership during the last year. Forty-one schools are owned by private, nonprofit corporations exempt from federal taxation; 35 schools are owned by states, and 3 by municipal governments.

Enrollments in the private schools during 1951-1952 totaled 14,441, or 53.4% of the total for the country. The enrollment in state and municipal schools was 12,631, or 46.6%. Both groups of schools have shown an increase in total enrollments in the last two years. The increase has been slightly greater proportionally in the government-owned schools, which in 1949-1950 enrolled 45.1% of all medical students, as compared with 46.6% during 1951-1952.

Freshman students in private schools numbered 3,771, or 50.7% of the total, and 3,665 or 49.3%, in the state and municipal schools. There has been a gain in the past two years by the governmental schools of 1.7% of the total freshmen students enrolled.

Statistics with respect to resident and nonresident student enrollment in state and municipal as compared with private schools are presented in the section on the geographic sources of freshman students.

Budgets of state and municipal schools for 1952-1953 will total approximately $39,220,000 and for the private schools $41,665,000. For the government-owned schools this represents an increase of $3,860,000 over a year ago and for the private schools an increase of $3,265,000. During the past two years the budgets of the state and municipal schools have increased approximately $8,200,000, while those of the private schools have increased by $5,165,000.

Tuition fees of state and municipal schools for residents of their own state will vary in 1952-1953 from

TABLE 25.—*Medical Schools Classified by Ownership, 1951-1952*

Privately Owned

1. College of Medical Evangelists
2. Stanford University School of Medicine
3. University of Southern California School of Medicine
4. Yale University School of Medicine
5. Georgetown University School of Medicine
6. George Washington University School of Medicine
7. Howard University College of Medicine
8. Emory University School of Medicine
9. Chicago Medical School
10. Northwestern University Medical School
11. Stritch School of Medicine of Loyola University
12. University of Chicago, The School of Medicine
13. Tulane University of Louisiana School of Medicine
14. Johns Hopkins University School of Medicine
15. Boston University School of Medicine
16. Harvard Medical School
17. Tufts College Medical School
18. St. Louis University School of Medicine
19. Washington University School of Medicine
20. Creighton University School of Medicine
21. Dartmouth Medical School
22. Albany Medical College
23. Columbia University College of Physicians and Surgeons
24. Cornell University Medical College
25. New York Medical College, Flower and Fifth Avenue Hospitals
26. New York University College of Medicine
27. University of Buffalo School of Medicine
28. University of Rochester School of Medicine and Dentistry
29. Duke University School of Medicine
30. Bowman Gray School of Medicine of Wake Forest College
31. Western Reserve University School of Medicine
32. Hahnemann Medical College and Hospital of Philadelphia
33. Jefferson Medical College of Philadelphia
34. Temple University School of Medicine
35. University of Pennsylvania School of Medicine
36. University of Pittsburgh School of Medicine
37. Woman's Medical College of Pennsylvania
38. Meharry Medical College
39. Vanderbilt University School of Medicine
40. Baylor University College of Medicine
41. Marquette University School of Medicine

State Owned

1. Medical College of Alabama
2. University of Arkansas School of Medicine
3. University of California School of Medicine
4. University of Colorado School of Medicine
5. Medical College of Georgia
6. University of Illinois College of Medicine
7. Indiana University School of Medicine
8. State University of Iowa College of Medicine
9. University of Kansas School of Medicine
10. Louisiana State University School of Medicine
11. University of Maryland School of Medicine and College of Physicians and Surgeons
12. University of Michigan Medical School
13. University of Minnesota Medical School
14. University of Mississippi School of Medicine
15. University of Missouri School of Medicine
16. University of Nebraska College of Medicine
17. State University of New York, College of Medicine at New York City
18. State University of New York at Syracuse College of Medicine
19. University of North Carolina School of Medicine
20. University of North Dakota School of Medicine
21. Ohio State University College of Medicine
22. University of Oklahoma School of Medicine
23. University of Oregon Medical School
24. Medical College of South Carolina
25. University of South Dakota School of Medical Sciences
26. University of Tennessee College of Medicine
27. Southwestern Medical School of the University of Texas
28. University of Texas School of Medicine
29. University of Utah School of Medicine
30. University of Vermont College of Medicine
31. Medical College of Virginia
32. University of Virginia Department of Medicine
33. University of Washington School of Medicine
34. West Virginia University School of Medicine
35. University of Wisconsin Medical School

Municipally Owned

1. University of Louisville School of Medicine
2. Wayne University College of Medicine
3. University of Cincinnati College of Medicine

1. Full Cost Tuition, Council on Medical Education and Hospitals, J. A. M. A. 149: 1243 (July 26) 1952.

$97 to $800 with a median of $432. For private schools tuition fees will range from $508 to $1,289, with a median of $813.

New Medical Schools

There has been no slackening of the widespread interest in the creation of new medical schools that has been demonstrated in recent years. One new school, the University of California at Los Angeles, admitted its first freshman class in the fall of 1951 and during the coming academic year will have both a freshman and a sophomore class enrolled. The University of Puerto Rico School of Medicine, which began operations two years ago, will have three classes in session in 1952-1953.

Statistics for these schools do not appear in the various tables included in this report. By custom, the Council includes in this report only statistics from approved medical schools. No medical school is eligible for consideration for admission to the list of approved medical schools until its full four year program is in operation. Thus the University of Puerto Rico will not be considered for approval until the academic year 1953-1954 and the University of California at Los Angeles until the academic year 1954-1955.

The University of North Carolina, which is expanding from a school of the basic medical sciences to a four year medical school, has completed construction of its University Hospital and associated facilities and will enroll its first third year class in the fall of 1952.

West Virginia University, which last year secured authorization from the state legislature to expand its basic science school to a four year school, is in the process of preparing plans for a teaching hospital and new basic science building. It is planned that construction will be initiated before the end of 1952. No date for the enrollment of a third year class has been announced as yet.

Mississippi's plans for the construction of a new medical school building and university hospital at Jackson, which will provide for expansion of its basic science school to a four year school, are reported to be in the final stage. It is expected that construction will be started within the next few months.

In Missouri, the legislature in the spring of 1952 made an initial appropriation of 6 million dollars to enable the University of Missouri to expand its basic science school to a four year school at Columbia.

Yeshiva University in New York City, which a year ago announced its intention of developing a medical school, is in the process of raising the necessary funds and plans to begin construction of its first unit before the end of 1952. The school has entered into an affiliation with a new municipal hospital nearing completion in the Bronx and has purchased land adjacent to this hospital on which it will erect its building.

The 1951 session of the Massachusetts legislature authorized the creation of a commission to study the advisability of the establishment of a medical school under the auspices of the University of Massachusetts. The commission's report recommending the establishment of such a school was submitted to the legislature in the spring of 1952. The legislature at that time voted not to authorize the establishment of the school but appropriated funds for further study of the problem.

Early in 1952 the governor of Connecticut appointed a special committee to study the need and desirability for providing more facilities for medical education in that state. The committee's report is expected to be submitted when the 1953 legislature meets.

In Kentucky, the 1952 session of the legislature instructed the Legislative Research Commission to study the possibility of establishing a medical school under the auspices of the University of Kentucky. In Florida, both the University of Miami and the University of Florida are giving serious and continuing study to the possibility of establishing medical schools. No action was taken by the New Jersey Legislature at its 1952 session with respect to establishing a medical school as recommended by the Medical College Commission in its 1951 report to the legislature. In Canada, the University of British Columbia, which is developing a four year medical school will have freshman, sophomore, and junior classes enrolled during the coming academic year.

Foreign Medical Schools

In February, 1950, the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges first published a list of foreign medical schools whose graduates they recommend for consideration on the same basis as graduates of approved medical schools in the United States. This list is intended as a guide for institutions and organizations in this country who deal with foreign medical graduates and also for American students who plan to study medicine abroad.

In developing this list, the two groups have received valuable aid from the Committee on Foreign Medical Credentials. This committee, established to advise the Council, consists of representatives of a large number of private and governmental agencies that are concerned with medical education, medical licensure, and the problems of foreign physicians. Table 26 gives the names of the 49 schools now included in the list.

The list is now accepted by 23 of the state licensing boards and by the National Board of Medical Examiners. It has been emphasized that this list is a tentative one to which other schools will be added when data have been received that justify their inclusion. Absence of a school from the list does not necessarily imply disapproval. Hence it is the responsibility of individual organizations and institutions to evaluate the credentials of graduates of schools not included in the list when such graduates apply to them for acceptance or other recognition. The Council can offer no advance statement concerning schools that might in the near future be included in the list.

American Students in Foreign Medical Schools

That a significantly large group of Americans are going abroad for their basic medical education has become increasingly apparent in the past two years. This trend has been brought to the attention of the Council by the voluminous correspondence that is received from students who are planning to study abroad, from students already enrolled in foreign schools, from licensing boards, hospitals, governmental agencies, and from the foreign schools themselves. It is now quite clear that many

students who are enrolled or who are planning to enroll in foreign schools have not fully comprehended certain of the problems connected with medical study abroad or the licensure problems to be faced when they return home.

Much has been said about the many students who are unable to gain admission to American medical schools. diminishing. The schools in Great Britain, faced with more applications from their own nationals than can be accepted, admit only a few Americans. The University of Geneva has found it necessary to establish, in this country, a committee to screen its American applicants, and it is anticipated that a similar committee may be established by the Belgian schools. It may be expected that

TABLE 26.—*Foreign Medical Schools*

List Prepared by the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges

On the basis of information presently available, the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges are of the opinion that medical institutions and medical organizations in the United States would be justified in considering current and past graduates of the following foreign medical schools on the same basis that they consider graduates of approved medical schools in the United States. This list is not final and will be supplemented as information is compiled for other schools.

Belgium

Free University of Brussels Faculty of Medicine
(Université Libre de Bruxelles Faculté de Médecine)
Catholic University of Louvain Faculty of Medicine
(Université Catholique de Louvain Faculté de Médecine or
Katholieke Universiteit te Leuven)
University of Ghent Faculty of Medicine
(Universiteit te Gent Faculteit der Geneeskunde, or
Université de Gand Faculté de Médecine)
University of Liège Faculty of Medicine
(Université de Liège Faculté de Médecine)

Brazil

University of São Paulo Faculty of Medicine
(Universidade de São Paulo Faculdade de Medicina)

Denmark

University of Copenhagen Faculty of Medicine
(Kobenhavns Universitet Laegevidenskabelige Fakultet)

Finland

University of Helsinki Faculty of Medicine
(Helsingfors Universitet Medicinska Fakulteten)
Medical Faculty Turku University
(Turun Yliopiston Laaketieteellinen Tiedekunta)

Lebanon

American University of Beirut School of Medicine

Netherlands

University of Amsterdam Faculty of Medicine
(Universiteit van Amsterdam Geneeskunde Faculteit)
State University of Groningen Faculty of Medicine
(Rijks-Universiteit te Groningen Geneeskunde Faculteit)
State University of Leiden Faculty of Medicine
(Rijks-Universiteit te Leiden Faculteit der Geneeskunde)
State University of Utrecht Faculty of Medicine
(Rijks-Universiteit te Utrecht Faculteit der Geneeskunde)

Norway

University of Oslo Faculty of Medicine
(Kongelige Frederiks Universitet Medisinske Fakultet)

Sweden

Royal Charles University Medical Faculty, Lund
(Kungl. Karolinska Universitetet Medicinska Fakulteten)
Charles Medico-Surgical Institute, Stockholm
(Karolinska Mediko-Kirurgiska Institutet)
Royal University of Uppsala Medical Faculty
(Kungl. Universitetet i Uppsala Medicinska Fakulteten)

Switzerland

The recommendation with respect to the following medical schools in Switzerland applies only to those graduates of Swiss medical schools who hold the Swiss Federal Diploma issued by the Federal Department of the Interior (Eidgendoissisches Department Des Innern, Département Fédéral de L'Intérieur) and obtainable only by Swiss citizens who hold the Certificate of Medical Studies (Akademische Zeugnis, Certificat d'Études Médicales), or who hold one of the following certificates which the Swiss Universities issue to those not citizens of Switzerland, who complete a course of study and pass examinations equivalent to those taken by Swiss citizens in qualifying for the Swiss Federal Diploma:

University of Basel—Academic Certificate on passing the medical examination for physicians (Akademische Zeugnis uber die bestandene Fachprufung für Ärzte).

University of Bern—Medical diploma on passing examination for medicine (Aerztliches Fakultats diplom uber die bestandene Fachprufung für Ärzte).

University of Geneva and University of Lausanne—Certificate of Medical Studies (Certificat d'Études Médicales).

University of Zurich—Medical diploma for Foreigners (Medizinisches Diplom für Ausländer).

University of Basel Faculty of Medicine
(Universität Basel Medizinische Fakultät)
University of Bern Faculty of Medicine
(Universität Bern Medizinische Fakultät)
University of Geneva Faculty of Medicine
(Université de Genève Faculté de Médecine)
University of Lausanne Faculty of Medicine
(Université de Lausanne Faculté de Médecine)
University of Zurich Faculty of Medicine
(Universität Zurich Medizinische Fakultät)

United Kingdom

The recommendation applies only to those physicians trained in the United Kingdom who hold medical degrees from the universities listed. The recommendation does not apply to those physicians who received their medical training at these universities or their affiliated hospital medical schools but who did not complete the work for the degree and who obtained their qualifications only through the examinations of the licensing corporations of the United Kingdom.

England

University of Birmingham Faculty of Medicine
University of Bristol Faculty of Medicine
University of Cambridge Faculty of Medicine
University of Durham Medical School, Newcastle-upon-Tyne
University of Leeds Faculty of Medicine
University of Liverpool Faculty of Medicine
University of London †
University of Manchester Faculty of Medicine
University of Oxford Faculty of Medicine
University of Sheffield Faculty of Medicine

Northern Ireland

Queen's University of Belfast Faculty of Medicine

Scotland

University of Aberdeen Faculty of Medicine
University of Edinburgh Faculty of Medicine
University of Glasgow Faculty of Medicine
University of St. Andrews Medical School, St. Andrews and Dundee

Wales

Welsh National School of Medicine, University of Wales, Cardiff

† Work for the medical degree of the University of London is offered at the following hospital medical schools:

Charing Cross Hospital Medical School
Guy's Hospital Medical School
King's College Hospital Medical School
London Hospital Medical School
Middlesex Hospital Medical School
Royal Free Hospital School of Medicine
St. Bartholomew's Hospital Medical College
St. George's Hospital Medical School
St. Mary's Hospital Medical School
St. Thomas' Hospital Medical School
University College Hospital Medical School
Westminster Hospital Medical School

It has not been generally known in this country that foreign medical schools also are faced with unprecedented numbers of applicants. Certain of the most respected foreign medical schools have by long tradition admitted all students who satisfy the minimal academic qualifications for admission. A number of these schools, faced with the alternative of either limiting enrollments or allowing their educational standards to deteriorate, are choosing the former alternative. It seems likely that opportunities for American students to obtain a medical education in the better foreign medical schools are many American students, unable to gain admission either to approved schools in the United States and Canada or to European schools with comparable standards may be tempted to turn to other schools where admission is easy, either at schools that have never in recent times maintained high educational standards or at certain formerly reputable schools that have yet to recover from the ravages of war.

American students should realize that the acceptance by certain European medical schools of all minimally qualified applicants does not indicate the absence of a

process of student selection. Although different in form and timing from that practiced by American schools, a selective process is employed. In Europe most students enter medical school at the end of a preliminary education equivalent to an American high school education plus two years of college. In many European schools a high proportion of the students entering medical school, sometimes as high as 50-75%, are eliminated on the basis of examinations, within the first one to three years. This mortality may be compared with an over-all attrition rate of less than 15% for the entire four years in American medical schools.

It is equally necessary to know that in most European medical schools instruction is given in languages other than English and that no special provision is made for students who lack facility in the native tongue. Many American students, because they have not been freely conversant in the native language, have experienced the greatest difficulty in following courses of instruction, in coping with examinations and in dealing with patients to whom they have been assigned as clinical clerks. The difficulty, if not impossibility, of acquiring a satisfactory medical training under these circumstances is obvious. Therefore, Americans who contemplate study abroad are urged to acquire a good grasp of the language of instruction before enrolling in a foreign medical school.

Many American students have gone abroad to study medicine without first having informed themselves of the educational regulations of the various state licensing boards. An increasing number of these students are returning to the United States with medical credentials that many of the state boards do not accept. A summary of the practices of the various licensing boards with respect to physicians who hold foreign medical credentials is published annually in the State Board Number of THE JOURNAL, and reprints are available without charge. This table indicates that 11 of the boards will not license any foreign-trained physicians, 23 will accept credentials obtained at schools included in the list of foreign medical schools prepared by the Council and the Association of American Medical Colleges, and the remaining boards have adopted their own special lists or regulations with respect to foreign students. In addition to studying the material presented in the State Board Number, every student considering attending a foreign medical school is strongly urged to determine in advance directly in writing from the state boards of those states in which he intends to practice whether a degree from the school he plans to attend will be accepted by these boards. A list of the names and addresses of the corresponding officers of the state boards of medical examiners is published in the State Board Number, and reprints of this list are also available without charge.

Finally, some American students are entering foreign medical schools with the hope that after a year or two they will be able to transfer to an approved school in the United States. The chances of their doing so are not good, first because American schools are already filled to capacity and, secondly, because differences in organization of the medical curriculum of foreign schools makes it difficult to fit such students into the programs of American schools.

The foregoing analysis is not intended as an effort to discourage competent American students from studying medicine at foreign universities where educational standards are high. It should, however, serve as a warning to those who may be attracted to institutions where admission is easily gained, which do not maintain educational standards comparable to American medical schools, and whose degrees may not be recognized by the licensing authorities in the United States.

Postgraduate and Continuation Courses for Physicians

Since 1937 the Council on Medical Education and Hospitals has published semiannually in THE JOURNAL lists of postgraduate and continuation courses for physicians. The opportunities presented in these listings include a wide variety of fields in clinical medicine and the basic sciences. The courses are for variable periods from one day to a year or longer. With the exception of the formal basic science courses, these courses are not usually intended to prepare physicians for certification by the American boards in the specialties. Some opportunities are offered, however, for review work in preparation for the examinations of the specialty boards.

The listing of courses currently being offered was published in the June 14, 1952, issue of THE JOURNAL and is available in reprint form. Medical schools, state medical societies, hospitals, state and city boards of health, and special societies continue to be active in developing this type of continuation training. Institutions offering this type of training are invited to announce such courses in the Council's semiannual listing.

This section is devoted to an analysis of the courses offered during the period July 1, 1951, to June 30, 1952. Brief mention is also made of some of the recent developments in postgraduate education. The statistical summaries are divided into three groups: short review courses of less than five days, courses of five days' duration or longer, and, lastly, a group including clinical conferences, graduate assemblies, study courses, and circuit courses. Comparable figures are shown for the preceding six years.

RECENT DEVELOPMENTS

The University of California School of Medicine presented a full-time five day postgraduate course for general practitioners. The course was conducted by the staff of the Mount Zion Hospital in collaboration with the medical extension division of the university.

The University of Colorado School of Medicine sent 12 members of its faculty to Cheyenne, Wyo., to conduct a series of 12 lectures designed to bring family doctors in Wyoming up-to-date on the latest medical advances. The course, which was given Feb. 20 through March 26, was the first course conducted by the school outside of Colorado. It was co-sponsored by the university office of graduate and postgraduate medical education and the Wyoming chapter of the American Academy of General

Practice. The course was intended as a practical review for general practitioners. The instructors, in addition to being faculty members, were all in active practice.

The Boston Lying-in Hospital, in conjunction with the Children's Hospital of Boston, presented a course in obstetrics and pediatrics designed to acquaint New England physicians with recent advances in knowledge concerning prenatal care and the care of newborn infants and infants in the first six months of life. The influence of nutrition on mother and infant, diabetes and other medical complications, threatened abortion, congenital abnormalities, feeding, and immunization were stressed. The course consisted of a two and one-half day program of lectures, conferences, clinical demonstrations, ward rounds, and clinical-pathological conferences.

Scientific advances in general practice are being presented in the 1952 program of the Michigan plan for postgraduate medical education. The University of Michigan Medical School, Wayne University College of Medicine, and the Michigan Department of Health are cooperating agencies sponsoring the plan. A program of extramural and intramural teaching courses is included. The extramural program is carried out in cities over the state. The intramural courses consist of review courses of varying length given in the university centers.

Albany Medical College is offering several continuation courses for practicing physicians in upper New York State, western Vermont, and Massachusetts.

Plans are being formulated to revise the Graduate Education Institute conducted by the Commission on Graduate Education of the Medical Society of the State of Pennsylvania for 1952-1953. The institute has been conducted for the past five years, with weekly sessions in the fall and spring at convenient locations throughout the state. The entire curriculum is being revised in terms of the needs of the general practitioner. Panel discussions, clinics, and round table discussions will be features of the new program. Included in the 1952-1953 program will be an experimental telephone program. A one hour panel discussion by national leaders covering the newest developments in the field of cardiology will originate in Philadelphia and be transmitted by telephone to all of the graduate education centers throughout Pennsylvania during one of the fall sessions.

The establishment of a department of postgraduate medicine at the University of Tennessee was recently announced. The university's program will be designed to meet the needs of the busy practitioner who has been out of school several years and will utilize the facilities of Memphis' medical center. Short, intensive courses of three days to two weeks will be offered.

The Special Committee on Postgraduate Work of the Texas Medical Association sponsored a series of postgraduate telephone broadcasts. Prior to the first broadcast, which was held Feb. 12, approximately 55 county medical societies, hospital staffs, and other local groups had made arrangements to participate in the statewide program. Illustrative slides were distributed by the commission to each listening group.

A course leading to the degree of Master of Medical Science is being offered by the Graduate School of the University of South Dakota to residents appointed in one of the affiliated hospitals or a hospital approved by the medical faculty. Course work will be offered by the departments of anatomy, biochemistry, microbiology and public health, pathology, and physiology and pharmacology. The course is designed to enable the resident serving either in a hospital or in a teaching capacity within the school to pursue a course program and to engage in research resulting in an acceptable thesis. Special attention is given to the basic sciences for the specialty board candidate.

TABLE 27.—*Short Review Courses of Less Than Five Days' Duration, 1951-1952*

State Where Given	No. of Courses	State Where Given	No. of Courses
Arkansas	3	Nebraska	4
California	4	New Hampshire	1
Colorado	14	New York	58
District of Columbia	3	North Carolina	2
Georgia	1	Ohio	11
Illinois	16	Oklahoma	9
Indiana	1	Oregon	2
Kansas	8	South Carolina	1
Louisiana	3	Tennessee	1
Massachusetts	4	Texas	10
Michigan	5	Virginia	4
Minnesota	18	Washington	6
Mississippi	2	Wisconsin	5
Missouri	10		
Total			206

TABLE 28.—*Short Review Courses of Less Than Five Days' Duration, 1951-1952*

Subject	No. of Courses Given	Attendance
Allergy	2	132
Arthritis	1	10
Anesthesiology	3	166
Bacteriology	2	4
Cardiovascular Disease	20	931
Dermatology and Syphilology	3	44
Diabetes	1	45
Electrocardiography	3	271
Fractures	2	66
Gastroenterology	3	263
Geriatrics	1	52
Industrial Medicine	2	9
Internal Medicine	3	187
Malignant Disease	9	205
Medicine—General	18	802
Neurology and Psychiatry	20	739
Obstetrics and Gynecology	17	747
Oncology	2	65
Ophthalmology and Otolaryngology	10	351
Parasitology	2	9
Pediatrics	11	599
Physical Medicine	2	33
Physiology	1	6
Poliomyelitis	6	136
Proctology	21	125
Public Health	4	36
Pulmonary Diseases	3	192
Radiology	6	486
Surgery	23	569
Therapy	4	165
Urology	1	9
Totals	206	7,454

The Postgraduate Education Committee of the Wisconsin Heart Association has announced a postgraduate clinic on heart disease for Wisconsin physicians. Identical clinics will be held at the Marquette University School of Medicine in Milwaukee and at the University of Wisconsin Medical School in Madison.

ANALYSIS OF COURSES OFFERED, 1951-1952

Courses of Less Than Five Days' Duration.—During 1951-1952, 26 states and the District of Columbia provided opportunities of less than five days' duration for physicians desiring to continue professional study in or near their home communities. There were 206 courses

offered. Table 27 lists these states and the number of courses given in each state. Thirty-one subjects were covered. Table 28 lists the subjects and also shows the attendance recorded. The attendance numbered 7,454. More than 500 attended courses during the year in cardiovascular disease, general medicine, neurology and psychiatry, obstetrics and gynecology, pediatrics, and surgery. The greatest number were enrolled for courses in cardiovascular disease.

The courses varied in length from sessions of one hour or a series of five or more lectures to four days full-time and consisted of organized courses, clinics utilizing hospital patients, lectures, and demonstrations. Of the 206 courses reported, 27 were four day courses, 101 were three day courses, 37 were two day courses, and 30 were given in one full day. The remainder of the courses were reported by lectures, sessions, or hours. Twenty-three medical schools participated in 112 of the courses offered. The facilities used in conducting these courses, in addition to medical schools, included hospitals, clinics, and hotels and combinations of these facilities.

These offerings were held every month, the majority being given in October. One course was offered continuously. The instructors were chosen from the faculties

TABLE 29.—*Postgraduate Courses of Five Days or Longer, 1951-1952*

State Where Given	No. of Courses	State Where Given	No. of Courses
Arkansas	11	Mississippi	3
California	82	Missouri	7
Colorado	11	New Jersey	41
Connecticut	15	New York	708
Delaware	1	North Carolina	2
District of Columbia	13	Ohio	6
Florida	4	Oklahoma	5
Georgia	61	Oregon	8
Illinois	289	Pennsylvania	50
Kansas	7	South Dakota	2
Kentucky	1	Tennessee	12
Louisiana	14	Texas	22
Maryland	20	Vermont	7
Massachusetts	90	Washington	5
Michigan	38	Wisconsin	1
Minnesota	7		
Total			1,543

of medical schools and from physicians practicing in the state in which the courses were offered as well as from out of the state. Fourteen courses were available for specialists only. Fees ranged from $5 to $75. The majority of the fees were less than $50. In 24 instances no fee was charged.

There were 214 fewer courses in this category in 1951-1952 than in the previous year, although the attendance was 16 more than in the 420 courses offered during 1950-1951. Scheduled courses in this group that were cancelled numbered 23.

Courses of Five Days' Duration or Longer.—In centers where ample clinical facilities are available, 1,543 postgraduate courses of five days' duration or longer were offered in 30 states and the District of Columbia during 1951-1952. The states that provided these opportunities and the number of courses that were given in each state are recorded in table 29. More than 900 of these courses were offered in Illinois and New York.

The 1,543 programs varied from refresher courses of five or more days to intensive courses extending over several months. A number of the courses were one year long, and a few were three year programs. Courses in 46 subjects were given. Table 30 lists the subjects covered, the number of courses in each subject, and the total attendance for the courses in each subject. In this type of training the total attendance was 17,511. More than 1,000 physicians attended courses in cardiovascular diseases, electrocardiography, internal medicine, general medicine, neurology and psychiatry, obstetrics and gynecology, ophthalmology and otolaryngology, and surgery.

In 167 instances courses of five days' duration were offered. There were 404 courses given that were of more than five days' duration but less than one month and 382 courses that ranged in length from one to three months.

TABLE 30.—*Postgraduate Courses of Five Days or Longer, 1951-1952*

Subject	No. of Courses Given	Attendance
Allergy	24	52
Anatomy	48	497
Arthritis	6	40
Anesthesiology	48	86
Bacteriology	17	49
Basic Sciences	12	318
Biochemistry	9	54
Cardiovascular Disease	57	1,103
Dermatology and Syphilology	53	334
Diabetes	7	61
Diseases of the Chest	25	477
Electrocardiography	50	1,611
Electroencephalography	1	43
Endocrinology	28	525
Endoscopy	34	49
Forensic Medicine	3	10
Fractures	10	64
Gastroenterology	33	206
Geriatrics	4	200
Hematology	30	197
Histology	1	10
Industrial Medicine	6	88
Internal Medicine	48	1,235
Malignant Disease	12	174
Medicine—General	68	1,732
Neurology and Psychiatry	117	1,280
Nuclear Science	8	45
Nutrition	3	400
Obstetrics and Gynecology	129	1,100
Oncology	3	22
Ophthalmology and Otolaryngology	171	1,125
Orthopedic Surgery	16	32
Orthopedics	7	73
Pathology	50	322
Pediatrics	57	413
Physical Medicine	24	54
Physiology	23	175
Plastic Surgery	3	57
Poliomyelitis	7	78
Proctology	19	69
Public Health	39	370
Radiology	55	637
Surgery	146	1,651
Therapy	5	173
Urology	14	137
Venereal Disease	13	83
Totals	1,543	17,511

In 458 instances the courses varied in length from three months to a year. Included in this figure are 3 courses that extended over three years and 55 courses that were arranged to suit the convenience and the time of the applicant. One hundred and thirty-two courses having from 6 to 35 sessions were reported as extending over several months. Instruction was both didactic and clinical for 889 courses, didactic only for 265, clinical only for 110, laboratory and didactic for 72, while 207 did not specify the type of instruction.

Medical school facilities were used for 914 courses, hospitals for 445, and clinics for 29. In many instances, two or all three of these sources were used in presenting an individual course. Hotel and other facilities were used for 59 courses. For 96 courses the type of facility used was not specified. The faculties of medical schools served

as instructors in 972 courses. Additional instructors were specialists in their field, chosen mainly from physicians residing within the state in which the course was given but including as well physicians from outside the state. Courses were offered during every month from July, 1951, through June, 1952. In 222 instances they were arranged to suit the convenience of the physician-students. Twenty-five courses were offered continuously and six quarterly. There were 172 courses offered to specialists only. Fees ranged from $3 to $1,000. For 91 courses no fee was charged.

Attendance records were obtained for 1,442 of the 1,543 courses given throughout the year cited. The attendance numbered 17,511. Scheduled courses that were cancelled totaled 236. By comparison with the previous year, there was an increase of 533 courses and an increase in attendance of 2,621.

Agencies participating in the sponsoring of these courses included medical schools, special societies, state medical societies, county medical societies, health departments, graduate schools of medicine, and the government agencies.

of the state. These opportunities were offered in every month. The fees ranged from $3 to $75. In 28 instances no fee was charged. The attendance numbered 40,970. The number of physicians pursuing such opportunities during 1951-1952 exceeded the attendance of the previous year by 17,115. Seven programs were cancelled.

SUMMARY

Some form of continuation study was reported as being provided during 1951-1952 in all but nine states. Table 31 summarizes for the three groups the number of courses given, the number for which attendance was reported, and the total attendance, together with comparable figures for six previous years. More courses were offered in 1951-1952 than in any previous year. The total attendance for all three groups last year was 65,935, an increase of 19,752 over the previous year.

A study of table 31 reveals some interesting trends. The number of courses offered rose rapidly following World War II reaching a peak in the 1947-1948 period. A sharp and continuing decline then occurred, swinging upward again in 1950-1951. This year again reveals an

TABLE 31.—*Postgraduate Courses Offered and Attendance, 1945-1952*

	Less Than Five Days' Duration			Five or More Days			Clinical Conferences, Graduate Assemblies, Study and Circuit Courses			Total		
	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance
1945-1946	154	128	4,140	1,070	1,043	19,991	52	52	21,824	1,276	1,223	45,955
1946-1947	239	205	16,274	1,291	1,137	23,062	21	21	20,475	1,551	1,363	59,811
1947-1948	496	478	31,569	1,279	1,183	24,878	25	25	26,356	1,800	1,686	82,803
1948-1949	304	262	16,821	1,074	984	28,507	67	67	38,058	1,445	1,313	83,386
1949-1950	161	161	10,523	1,080	1,080	24,087	129	129	40,708	1,370	1,370	75,318
1950-1951	420	420	7,438	1,067	1,047	14,890	79	74	23,855	1,566	1,541	46,183
1951-1952	206	204	7,454	1,543	1,442	17,511	120	119	40,970	1,869	1,765	65,935
Totals	1,980	1,858	94,219	8,404	7,916	152,926	493	487	212,246	10,877	10,261	459,391

Clinical Conferences, Graduate Assemblies, Study and Circuit Courses.—In 31 states and the District of Columbia, 116 clinical conferences, graduate assemblies, and study and circuit courses were held during 1951-1952. This type of training varied in length from one day sessions to two weeks for conferences, assemblies, and study courses. In six states, circuit courses were held at various times in 4 to 20 centers. Contributing agencies were speakers' bureaus, medical schools, state and county medical societies, state health departments, and special societies. Twenty-three subjects were covered. The majority of the opportunities afforded were in general medicine. Other subjects covered were allergy, anatomy, bacteriology, basic sciences, cardiovascular disease, dermatology and syphilology, endocrinology, fractures, industrial medicine, malignant disease, internal medicine, obstetrics and gynecology, ophthalmology and otolaryngology, pediatrics, physical medicine, public health, diseases of the chest, radiology, surgery, urology, and venereal disease. The facilities of hospitals, clinics, medical schools, and hotels were used. Instruction was both didactic and clinical. Instructors included medical school faculties and physicians practicing in the state in which the training was given as well as from out

increase to a level exceeding that of 1947-1948. A similar review of the attendance figures shows a parallel trend in the immediate postwar years, but with a marked and continuous drop occurring in the 1950-1951 records, i. e., even after the number of courses had again started to rise. This disproportionate situation, when viewed last year, raised some rather difficult questions. However, the attendance reports this year have reversed the picture by showing a marked increase, thereby correlating more readily with the increase in the number of courses offered.

Medical education is a continuous process, and it is the responsibility of every physician to keep abreast of advances in medicine. Data presented in this section attest to the fact that physicians of the country recognize this responsibility. The increasing number of institutions and agencies developing opportunities for continuation study is commendable. The Council on Medical Education and Hospitals is now embarking on a more extensive study of the opportunities for postgraduate education and for continuation study with the hope that it can be of more service to groups who desire to initiate such opportunities or who desire to further develop their existing programs.

APPROVED MEDICAL SCHOOLS IN THE UNITED STATES

ALABAMA

Birmingham

Medical College of Alabama.—Established in 1943 as a division of the University of Alabama. Located in Birmingham in 1944. In 1945 assumed title to Jefferson Hospital and Hillman Hospital, Birmingham. The Medical College of Alabama cares for all indigent patients of the county, maintenance of which is paid to the university on a per diem basis by the county. In 1943 the appropriation included $1,000,000 for the building of a new medical school which was completed and occupied in the Fall of 1951. With increased facilities of this new building, the entering class of 1951 was increased to 80 students. First instruction in the Medical College of Alabama started June 4, 1945, with a junior class and this class was graduated in October 1946. On October 8, 1945, the School of the Basic Medical Sciences on the University Campus, established in 1920, and its faculty, were absorbed into the new Medical College of Alabama. The medical college is coeducational. Minimum entrance requirements are three years of college work. Tuition is as follows: for legal residents of Alabama $400 per academic year plus incidental fees of $45. Nonresidents of the state are charged an additional $250 each session. The registration for the 1951-52 session was 237; graduates 49. The last session began for the first and second years on October 1, 1951, and for the third and fourth years on September 10, 1951. The session ended for all classes on May 31, 1952. The next session for all four classes will begin September 19, 1952, and end on May 30, 1953. The Dean is James J. Durrett, M.D.

ARKANSAS

Little Rock

University of Arkansas School of Medicine, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The curriculum covers four sessions of nine months each. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. The fees for the four years for residents of Arkansas are $380 a year; enrollment is restricted to residents of Arkansas. The registration for the 1951-1952 session was 327, graduates 78. The last session began Sept. 24, 1951 and ended June 16, 1952. The next session will begin Sept. 22, 1952 and will end June 15, 1953. The Dean is Hayden C. Nicholson, M.D.

CALIFORNIA

Loma Linda-Los Angeles

College of Medical Evangelists, Loma Linda; Boyle and Michigan Avenues, Los Angeles 33.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. Three years of collegiate work are required for admission. The freshman, sophomore and junior years consist of nine month academic sessions and the senior year will have in addition to the nine month session a four weeks' clinical clerkship during the summer between the junior and senior years. A twelve including fees are respectively, $1,290.00, $1,278.50, $1,284.25, $1,301.75. The registration for 1951-1952 was 384; graduates 80. The last session for month internship in an approved hospital is required. The yearly tuitions freshman and sophomore students began on Sept. 2, 1951 and ended June 6, 1952 respectively. The junior session began on Sept. 9, 1951 and ended June 6, 1952. The senior session began June 10, 1951 and was completed June 7, 1952. The next session for freshman and sophomore students will begin Aug. 31, 1952, junior students Sept. 7, 1952 and senior students began June 8, 1952 and will end June 5, 1953 for the first three classes and June 7, 1953 for seniors. The President is Walter E. Macpherson, M.D., Los Angeles. The Dean is Harold Shryock, M.D., Loma Linda.

Los Angeles

University of Southern California School of Medicine, 3518 University Avenue, Zone 7.—Organized in 1895 as the University of Southern California College of Medicine. First class graduated in 1899. In 1908 it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. Entrance requirements are three years of college work. An internship is required for graduation. Coeducational since organization. Annual fees amount to approximately $865. The registration for 1951-1952 was 276; graduates 66. The last session began Sept. 17, 1951 and ended June 14, 1952. The next session will begin Sept. 15, 1952 and will end June 13, 1953. The Dean is Burrell O. Raulston, M.D.

San Francisco

University of California School of Medicine, Medical Center, San Francisco 22.—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California at Los Angeles became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The medical course consists of four academic years, each containing two semesters of sixteen weeks each. The fees are $320 per academic year. Nonresidents are charged $250 additional each year. The registration for the 1951-1952 session was 282; graduates 65. The last session began Sept. 24, 1951 and ended June 20, 1952. The next class will begin Sept. 22, 1952 and will end June 19, 1953. The Dean is Francis Scott Smyth, M.D.

Stanford University-San Francisco

Stanford University School of Medicine, University Campus, Stanford University; 2398 Sacramento Street, San Francisco.—The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry and physiology are located on the campus at Stanford University, which is thirty miles southeast of San Francisco adjoining the city of Palo Alto. The post office is Stanford University. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. Three years of collegiate work are required for admission. The quarter plan is in operation. An internship is a requirement for graduation. The average fee for each of the four years is $780. The registration for 1951-1952 was 246; graduates 54. The last session for all classes began Sept. 24, 1951 and ended June 11, 1952. The next session will begin Sept. 29, 1952 and will end June 10, 1953. The Dean is Loren R. Chandler, M.D.

COLORADO

Denver

University of Colorado School of Medicine, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine were merged Jan. 1, 1911. Coeducational since organization. The entrance requirements are three years of collegiate work. The fees average $525 per academic year. Nonresidents are charged $2,130 additional each year. The registration for 1951-1952 was 313; graduates 74. The last session began Sept. 24, 1951 and ended June 7, 1952. The next session will begin Sept. 22, 1952 and will end June 6, 1953. The Dean is Robert C. Lewis, Ph.D.

CONNECTICUT

New Haven

Yale University School of Medicine, 333 Cedar Street.—Initial organization of the School of Medicine was completed in 1812 following passage of a bill by the Connecticut General Assembly in 1810 granting a charter for "The Medical Institution of Yale College," to be conducted under joint supervision of the College and the Connecticut State Medical Society. Formally opened in 1813; first degrees conferred 1814. In 1884, with the approval of the Medical Society, the original charter was amended to place the school definitely in the control of the College as the Medical School of Yale College. The name Yale College was changed to Yale University in 1887, and the name of the Medical School was automatically changed. The present name was adopted in 1918. Coeducational since 1916. The requirements for admission are three years collegiate work. The fees average $829 per academic year. The registration for 1951-1952 was 283; graduates 66. The last session began September 19, 1951 and ended May 31, 1952. The next session will commence September 24, 1952 and will end May 30, 1953. The Dean is Vernon W. Lippard, M.D.

DISTRICT OF COLUMBIA

Washington

Georgetown University School of Medicine, 3900 Reservoir Road, N.W., Zone 7.—Organized in 1851. First class graduated in 1852. The degree of Bachelor of Arts or Bachelor of Science or its equivalent from an approved college of arts and sciences is required for admission of nonveterans, but veterans may be admitted with a minimum of 90 semester hours of credit. The fees average $967 per academic year. Registration for 1951-1952 was 435; graduates 95. The last session for freshmen started Sept. 17, 1951 and ended May 24, 1952; the sophomore class started Sept. 17, 1951 and ended May 24, 1952; the junior class started Aug. 29, 1951 and ended May 16, 1952 and the senior class started on May 28, 1951 and ended on May 24, 1952. The date of graduation was June 9, 1952. The next session for freshmen and sophomores will begin Sept. 15, 1952 and end May 23, 1953; the juniors will be in session from Aug. 27, 1952 to May 15, 1953; the senior session began May 26, 1952 and will end May 23, 1953. The date of graduation will be June 8, 1953. The Dean is Rev. Paul A. McNally, S. J., Ph.D.

George Washington University School of Medicine, 1335 H Street N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name "National Medical College." Classes were graduated in 1826 and in all subsequent years except in 1834-1838 and 1861-1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904 by an Act of Congress the title of George Washington University was granted to the Institution. Coeducational since 1884. Three years of college work is required for admission. The fees average $755 per academic year. Registration for 1951-1952 was 352; graduates 86. The last session began Sept. 17, 1951 and ended May 28, 1952. The next session will begin Sept. 15, 1952 and will end on May 27, 1953. The Dean is Walter A. Bloedorn, M.D.

Howard University College of Medicine, 520 W Street, N.W.—Chartered in 1867. Organized in 1869. The first class was graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The minimum requirements are four years of collegiate work, but practically the bachelor's degree. The course covers four years of thirty-three weeks each. The fees are respectively: $526.75; $516.75; $486.75; $502.25. The registration for 1951-1952 was 295; graduates 74. The last session began Sept. 27, 1951 and ended June 13, 1952. The next session will begin Sept. 22, 1952 and will end June 5, 1953. The Dean is Joseph L. Johnson, M.D.

GEORGIA

Atlanta

Emory University School of Medicine.—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the School of Medicine of Emory University in 1915. Three years of collegiate work are required for admission. The course of study is four academic years; 36 weeks each in the first and second years; 40 weeks each in the third and fourth years. The fees for each of the four academic years are $800. The registration for 1951-1952 was 284, graduates 68. The last session for freshmen and sophomores began Aug. 30 and Sept. 4, 1951, and ended June 6, 1952. The last session for juniors and seniors began Aug. 1, 1951 and ended June 6, 1952. The next session for freshmen and sophomores will begin Aug. 28 and Sept. 2, 1952 and will end June 6, 1953. The next session for junior and senior classes will begin Aug. 4, 1952 and end on June 6, 1953. The Dean is Richard Hugh Wood, M.D.

Augusta

Medical College of Georgia, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1933, the name was changed to the University of Georgia School of Medicine. On Jan. 18, 1950 it became the Medical College of Georgia. Property transferred to the University in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. Three years of college work are required for admission. Fees for 1952-1953, $390 per academic year for residents of Georgia, nonresidents, $690. Only bona-fide residents of Georgia admitted (with exception of A.S.T. and V-12 Program students during World War II). The registration for the 1951-1952 session was 312; graduates 76. The 1952-1953 session for the fourth-year class will begin Sept. 11, 1952 and end June 6, 1953; the first, second and third year classes will begin Sept. 18, 1952 and end June 6, 1953. The President is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

Chicago Medical School, 710 South Wolcott Ave.—Founded in 1912 as the Chicago Hospital College of Medicine. In 1919 the name of the institution was changed to The Chicago Medical School. The school moved from its former location to its present site in the Medical Center in 1930. The Chicago Medical School is a nonsectarian, coeducational institution. It is chartered in the State of Illinois as a nonprofit institution. A collegiate degree is required for admission. A hospital internship is a requirement for graduation. The yearly tuition and fees are, respectively, $664, $872, $837, $649. The registration for 1951-1952 was 277; graduates 51. The last session for freshmen began Oct. 1, 1951 and for sophomores July 2, 1951 and ended June 14, 1952; the junior and senior session began Oct. 1, 1951 and ended for seniors June 21, 1952. The junior class will end Sept. 20, 1952. The next session for freshmen, juniors and seniors will begin Sept. 29, 1952 and will end June 20, 1953, Sept. 26, 1953 and June 27, 1953, respectively. The sophomore class began June 30, 1952 and will end June 20, 1953. The President is John J. Sheinin, M.D. The Dean of Faculty is F. J. Mullin, Ph.D.

Northwestern University Medical School, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The requirement for admission is three years of collegiate work. The B.S. in medicine degree may be conferred before the end of the senior year. The total fees are $830 each year. The registration for 1951-1952 was 522; graduates 139. The last session began Oct. 3, 1951 for freshmen, sophomores and juniors and ended June 16, 1952. The senior session began June 13, 1951 and ended June 16, 1952. The next session will begin Oct. 1, 1952 for freshmen, sophomores and juniors and will end June 15, 1953. The senior session began June 18, 1952 and will end June 15, 1953. The Dean is Richard H. Young, M.D.

Stritch School of Medicine of Loyola University, 706 South Wolcott Avenue.—Organized in 1915 by acquisition of Bennett Medical College, which had been organized in 1869. Facilities enlarged by the acquisition of Chicago College of Medicine and Surgery. Faculties in basic sciences put on full time basis and assumed name of Loyola University School of Medicine in 1917. Operated as an organic part of Loyola University. Name officially changed to Stritch School of Medicine of Loyola University on April 15, 1948. Coeducational since organization. Three years of collegiate work is required for admission. The fees are $675 a year. The registration for 1951-1952 was 333; graduates 88. The last session for freshmen, sophomores and juniors began Sept. 24, 1951, and ended June 21, 1952; the session for seniors began Sept. 24, 1951, and ended June 7, 1952. The next session will begin Sept. 29, 1952, and will end June 20, 1953, for the first three classes and will begin Sept. 8, 1952 and end June 6, 1953, for the seniors. The Dean is John F. Sheehan, M.D.

University of Chicago, The School of Medicine, Fifty-Eighth Street and Ellis Avenue.—Organized in 1924, as a part of the Ogden Graduate School of Science of the University of Chicago. In 1932, when the University of Chicago reorganized its departments, the medical departments were included in the Division of Biological Sciences. The work of the first two years in the medical courses has been given on the University Quadrangles since 1899; but the last two years were offered only at Rush Medical College, which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine. All undergraduate instruction is now given only on the campus of the University of Chicago. A special function of the school is to train people for making contributions to the advancement of medical science. The requirements for admission are three years of collegiate work. The curriculum covers twelve quarters of work. The tuition fee averages $904. The registration for 1951-1952 was 272; graduates 62. Quarters begin in March, June, September and December of each year. The Dean of the Division of the Biological Sciences is Lowell T. Coggeshall, M.D. All correspondence pertaining to student affairs, including admission, should be addressed to Joseph J. Ceithaml, Ph.D., Dean of Students.

University of Illinois College of Medicine, 1853 West Polk Street, Zone 12.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June 1912, and was restored in March 1913, when the present title was assumed. The staff of the Rush Medical College was incorporated in the University of Illinois College of Medicine in 1942 and at the same time Presbyterian Hospital, Chicago, became a teaching unit of the university. Coeducational since 1898. Three years of collegiate work are required for admission. The B.S. in medicine degree may be conferred at the end of the second year. The fees for residents of Illinois average $292 per academic year; nonresidents pay an additional fee of $300. The registration for the 1951-1952 session was 671; graduates 169. The last session began Oct. 1, 1951 and ended June 28, 1952. The next session will begin Sept. 29, 1952 and will end June 29, 1953. The Dean is Stanley W. Olson, M.D.

INDIANA

Bloomington-Indianapolis

Indiana University School of Medicine, Bloomington; 1040 West Michigan Street, Indianapolis.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. Three years of college work are required for admission. The work of the first two semesters is given at Bloomington; the remainder of the work at Indianapolis. Regular fee for two semesters of work is $300 for residents of Indiana and $560 for nonresidents. The registration for the 1951-1952 session was 577; graduates, 137. The last session began Sept. 17, 1951 and ended June 16, 1952. The next session will begin Sept. 22, 1952 and will end June 9, 1953. The Dean is John D. VanNuys, M.D., Indianapolis.

IOWA

Iowa City

State University of Iowa College of Medicine, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. The tuition fee is $256 each year for residents of Iowa and $566 for nonresidents. The registration for 1951-1952 was 418; graduates 80. The last session began Sept. 20, 1951 and ended June 6, 1952. The next session will begin Sept. 25, 1952 and will end on June 12, 1953. The Chairman of the Executive Committee is Willis M. Fowler, M.D.

KANSAS

Lawrence-Kansas City

University of Kansas School of Medicine, Lawrence; 39th and Rainbow Boulevard, Kansas City.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medicochirurgical College, founded in 1897. Absorbed Kansas Medical College of Topeka in 1913. The first class graduated in 1906. At present the first year (two semesters and one summer session) is given on the University campus at Lawrence

while the remaining three years is given at the Medical Center in Kansas City, Kansas. Coeducational since 1880. The requirement for admission is three years of collegiate work, four years preferred. The fees are $475 per year; the nonresident fees are $925 per year. The registration for 1951-1952 was 409; graduates 82. The last session began June 5, 1951 and ended May 24, 1952. The 1952 freshman class began June 9, 1952 (60) and Sept. 18, 1952 (60). The sophomore class of 1952 began its work on Sept 25, 1952 at Kansas City. The junior and senior classes began June 3, 1952 and will end May 30, 1953. Three-fourths of each junior and senior class is in school each quarter of the school year while one-fourth is on vacation (juniors) or preceptorship (seniors). The Dean is W. Clarke Wescoe, M.D., Kansas City.

KENTUCKY

Louisville

University of Louisville School of Medicine, 101 West Chestnut Street, Zone 2.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization; became non-segregational in 1951. Three years of collegiate work are the minimum requirements for admission. Tuition for freshmen is $800 for residents of Kentucky and $1200 for nonresidents, per school year. These figures include special fees excepting graduation fee of $10. The registration for 1951-1952 was 386, excluding unclassified and special students; graduates 94. The school year is divided into two semesters and students are accepted for matriculation only at the beginning of the first semester. The last session began Sept. 11, 1951, and ended May 31, 1952. The next session begins on Sept. 15, 1952, and will end on June 6, 1953. The Dean is J. Murray Kinsman, M.D.

LOUISIANA

New Orleans

Louisiana State University School of Medicine, 1542 Tulane Avenue, Zone 12.—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session began in October 1931 with students of first and third years. Course covers four sessions of not less than 36 weeks each. A minimum of three years' collegiate work is required for admission. Total fees, $120 each year for residents of Louisiana; additional tuition of $400 each year for nonresidents. The registration for 1951-1952 was 438; graduates 98. The last session began Sept. 4, 1951 and ended May 31, 1952. The next session will begin Sept. 2, 1952 and end June 1, 1953. The Dean is William W. Frye, M.D.

Tulane University of Louisiana School of Medicine, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1836 and in all subsequent years except 1863-1865, inclusive. It became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. A minimum of three years of collegiate work is required for admission. Total fees average $800 per academic year. The registration for the 1951-1952 session was 511; graduates 132. The last session began on Sept. 17, 1951 and ended on May 27, 1952. The next session will begin Sept. 15, 1952 and will end June 2, 1953. The Dean is M. E. Lapham, M.D.

MARYLAND

Baltimore

Johns Hopkins University School of Medicine, 710 North Washington Street.—The nucleus of a medical faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The requirement for admission is a college degree. The course extends over four years of eight and one-half months each. The fees averaged $830 per academic year. The registration for 1951-1952 was 299; graduates 79. The last session began on Oct. 1, 1951 and ended June 10, 1952. The next session will begin Sept. 29, 1952 and will end June 9, 1953. The Dean is Alan M. Chesney, M.D.

University of Maryland School of Medicine and College of Physicians and Surgeons, 522 W. Lombard Street, Zone 1.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine; Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. Three years of college work are required for admission. The tuition fees average $516 for residents of the state; for nonresidents $250 additional. The registration for 1951-1952 was 390; graduates 97. The last session began Sept. 20, 1951 and ended June 7, 1952. The next session will begin Sept. 18, 1952 and will end June 6, 1953. The Dean is H. Boyd Wylie, M.D.

MASSACHUSETTS

Boston

Boston University School of Medicine, 80 East Concord Street, Zone 18.—Organized in 1873 as a homeopathic institution. In 1874, the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became non-sectarian in 1918. Coeducational since organization. Applicants are required to present a minimum of three years of premedical work. Total fees average $821 per year. The registration for 1951-1952 was 281; graduates 68. The last session for freshmen, sophomores and juniors began Sept. 10, 1951, and ended May 24, 1952. The last senior class began June 11, 1951, and ended June 2, 1952. The present senior class began June 9, 1952, and will end June 8, 1953. All other classes will be enrolled Sept. 15, 1952, and the session will end May 29, 1953. The Dean is James M. Faulkner, M.D.

Harvard Medical School, 25 Shattuck Street, Zone 15.—Organized in 1782. The first class graduated in 1788. At least two years of collegiate work are required for admission. The fees average $830. The registration for 1951-1952 was 516; graduates 142. The last session began Sept. 24, 1951 and ended on June 19, 1952. The next session for freshmen, sophomores and juniors will begin Sept. 22, 1952 and will end June 11, 1953. The senior class began on June 9, 1952 and will end June 11, 1953. The Dean is George Packer Berry, M.D.

Tufts College Medical School, 136 Harrison Avenue, Zone 11.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. A bachelor's degree is required for admission. Enrollment is generally limited to residents of the New England States. The course covers four years. Total fees for each of the four years are, respectively, $813, $808, $808, $828. The registration for 1951-1952 was 429; graduates 95. The last session for freshmen, sophomores and juniors began Sept. 19, 1951; for seniors June 11, 1951, and all classes ended June 8, 1952. The present session began for the seniors on June 9, 1952 and for the other classes will begin Sept. 24, 1952, and will end June 7, 1953. The Dean is Dwight O'Hara, M.D.

MICHIGAN

Ann Arbor

University of Michigan Medical School.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed 1915. Coeducational since 1870. The entrance requirements are three years of collegiate work. The fees average $400 per academic year; nonresidents $700 a year. The registration for 1951-1952 was 615; graduates 126. The last session began Sept. 24, 1951 and ended June 14, 1952. The next session will begin Sept. 22, 1952 and will end June 13, 1953. The Dean is A. C. Furstenberg, M.D.

Detroit

Wayne University College of Medicine, 1512 St. Antoine Street, Zone 26.—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized in 1879). Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1869. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit city colleges into a university system. Coeducational since 1917. Entrance requirement is three years in an accredited college or university. Until further notice, enrollment is limited to residents of the State of Michigan. The fees average $528 for the school year. The registration for 1951-52 was 272; graduates 62. The last session began Sept. 10, 1951 and ended June 7, 1952. The next session will begin Sept. 15, 1952 and will end June 13, 1953. The Dean is Gordon H. Scott, Ph.D.

MINNESOTA

Minneapolis

University of Minnesota Medical School, Zone 14.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery and reorganized in 1888 by absorption of the St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged.. Present title in 1913. Coeducational since organization. The entrance requirements are three years of university work. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.), which is granted at the end of the course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work or of public health work has been completed. Total fees are $338.45 per academic year for residents and $670.95 for nonresidents. The registration for 1951-52 was 498; graduates 109. The last session began Oct. 1, 1951 and ended July 26, 1952. The next session will begin Sept. 29, 1952 and will end July 25, 1953. The school year of the first three years consists of fall and winter quarters of approximately 11 weeks and a spring quarter of approximately 16 weeks; in the senior year the spring quarter is 11 weeks in length and graduation is in June. The Dean of Medical Sciences is Harold S. Diehl, M.D.

MISSOURI

St. Louis

St. Louis University School of Medicine, 1402 South Grand Boulevard, Zone 4.—Organized in 1901 as the Marion-Sims Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. Completion of 3 years of college study is minimum admission requirement, but students presenting meritorious credits in excess of minimum are accepted by preference. The fees average $813 per year. The registration for 1951-1952 was 495; graduates 115. The last session began Sept. 18, 1951 and ended June 1, 1952. The next session will begin Sept. 16, 1952 and will end June 1, 1953. The Regent is Rev. Edward T. Foote, S.J.

of Medicine in 1917. Operated as an organic part of Loyola University.

and one summer session) is given on the University campus at Lawrence

Washington University School of Medicine, 660 S. Kingshighway, Zone 10.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. Three years of college work is required for admission. The fees average $809. The registration for 1951-52 was 372; graduates 99. The last session began on Sept. 17, 1951 and ended June 11, 1952. The next session will begin on Sept. 15, 1952 and will end on June 10, 1953. The Dean is Robert A. Moore, M.D.

NEBRASKA

Omaha

Creighton University School of Medicine, 302 North Fourteenth Street, Zone 2.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title 1921. Coeducational since organization. Three years of collegiate work is required for admission. The tuition fees average $809 per academic year. The registration for 1951-1952 was 295; graduates 68. The last session began Sept. 19, 1951 and ended June 5, 1952. The next session will begin Sept. 17, 1952 and will end June 4, 1953. The Dean is F. G. Gillick, M.D.

University of Nebraska College of Medicine, Forty-Second Street and Dewey Avenue, Zone 5.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. The University of Nebraska College of Medicine was established in Lincoln in 1883, and in 1902 the Omaha Medical College became a part of the University of Nebraska and has continued with the present title College of Medicine, University of Nebraska. The instruction of the first two years was given at Lincoln and of the last two years at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. Three years of college work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees average $450 per academic year; nonresidents are charged $615. The registration for 1951-52 was 342; graduates 84. The last session for seniors began June 11, 1951 and ended June 7, 1952. The last session for freshmen, sophomores and juniors began Sept. 17, 1951 and ended June 21, 1952. The next session for seniors began July 1, 1952 and will end June 13, 1953. The next session for freshmen, sophomores and juniors will begin Sept. 24, 1952 and will end June 20, 1953. The Dean is James P. Tollman, M.D.

NEW YORK

Albany

Albany Medical College, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The requirement for admission is three years of college work. The fees average $825 per academic year. The registration for 1951-1952 was 209; graduates 47. The last session began on Sept. 10, 1951 for the freshmen and sophomores and ended on May 29, 1952; the last session for the juniors began on Sept. 10, 1951 and ended on May 22, 1952, and for the seniors the last session began on June 1, 1951 and ended on May 29, 1952. The present senior class began on June 1, 1952. The next session for the freshmen, sophomores and juniors will begin on Sept. 8, 1952 and will end on May 29, 1953. The Dean is James Allan Campbell, M.D.

Brooklyn

State University of New York College of Medicine at New York City, Brooklyn, 350 Henry Street, Zone 2.—Originally organized in 1858 as the collegiate department of The Long Island College Hospital. The first class was graduated in 1860 and the last class in 1930. Was chartered in 1930 as Long Island College of Medicine with the first class graduated in 1931 and the last in 1949. It was merged with the State University of New York on April 5, 1950, and the first class under the University was graduated in June 1950. It is coeducational. Three years of collegiate work, including specified courses, are required for admission. The fees are $715 per academic year. The registration for 1951-1952 was 537; graduates 103. The last session for seniors began Sept. 10, 1951 and ended May 31, 1952. The last session for juniors began on Sept. 17, 1951 and ended May 31, 1952. The last session for freshmen and sophomores began on Sept. 17, 1951 and ended June 7, 1952. The next session for freshmen, sophomores and juniors begins on Sept. 15, 1952 and ends on June 6, 1953. For seniors the next session will begin Sept. 8, 1952 and will end on May 29, 1953. The Dean is Jean A. Curran, M.D.

Buffalo

University of Buffalo School of Medicine, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The minimum requirement for admission is four years of collegiate work including certain prescribed science subjects. The fees average $828. The registration for 1951-1952 was 270; graduates 64. The last session began Sept. 24, 1951 and ended June 14, 1952 for freshmen, sophomores and juniors, and on Sept. 4, 1951 and ended June 7, 1952 for seniors. The next session will begin Sept. 22, 1952 and end June 13, 1953 for freshmen, sophomores and juniors, and will begin July 7, 1952 and end June 6, 1953 for seniors. The Dean is Stockton Kimball, M.D.

New York

Columbia University College of Physicians and Surgeons, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. Three years of collegiate work are required for admission. Fees average $895 per academic year. The registration for 1951-1952 was 458; graduates 105. The last session began on June 4, 1951 for juniors and seniors, and ended on May 31, 1952. The last session for freshmen and sophomores began on Sept. 17, 1951 and ended May 31, 1952. The present session began on June 9, 1952 and June 2, 1952 for the juniors and seniors respectively, and will end May 29, 1953, and will begin on Sept. 15, 1952 for the freshmen and sophomores and will end May 29, 1953. The Dean is Willard C. Rappleye, M.D.

Cornell University Medical College, 1300 York Avenue.—Organized in 1898. Coeducational since organization. First year teaching was given formerly to approximately one third of the class at Ithaca but in 1938 this division was discontinued and all instruction is now in New York City. All students matriculated must be graduates of approved colleges or scientific schools or seniors *in absentia* who will receive the bachelor degree from their college on successful completion of one or more years of the medical course. The fees average $926 a year. The registration for 1951-1952 was 329; graduates 80. The last session began for senior students July 9, 1951 and ended June 11, 1952. The freshman, sophomore and junior classes began Sept. 13, 1951 and ended June 11, 1952. The present session for seniors began on June 23, 1952 and will begin for the remaining three classes on Sept. 11, 1952, and all classes will end June 10, 1953. The Dean is Joseph C. Hinsey, Ph.D.

New York Medical College, Flower and Fifth Avenue Hospitals, 1 East 105th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1908; the title New York Medical College and Flower Hospital in 1936; the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. First class graduated in 1861. Coeducational since 1919. Three years of college work is the minimum requirement for admission but a degree is preferred. The fees average $832 per academic year. The registration for 1951-1952 was 486; graduates 109. The last session began Sept. 17, 1951 and ended June 4, 1952. The next session will begin June 15, 1952 for fourth year students; June 30, 1952 for third year students; Sept. 15, 1952 for first and second year students. The President and Dean is J. A. W. Hetrick, M.D.

New York University College of Medicine, 477 First Avenue, Zone 16.—This is the undergraduate medical college of the New York University-Bellevue Medical Center which comprises also the Post-Graduate Medical School and the University Hospital.—The Medical Department of New York University (then called the University of the City of New York) was organized in 1841 as the University Medical College. In 1898 it united with the Bellevue Hospital Medical College, organized in 1861, under the name of University and Bellevue Hospital Medical College. In 1935 the name was changed to New York University College of Medicine. In 1947 the charter of the University and the statutes were amended establishing the New York University-Bellevue Medical Center, which includes the College of Medicine. Coeducational since 1919. Entrance requirements give preference to those who have completed not less than three full years in an approved college of arts and sciences. The fees average $900 per academic session. The registration for 1951-1952 was 510; graduates 114. The last session began Sept. 24, 1951 for freshmen, sophomores, juniors and seniors and ended May 24, 1952 for freshmen and sophomores, June 14, 1952 for juniors and May 17, 1952 for seniors. The next session begins Sept. 15, 1952 for all classes and ends May 23, 1953 for freshmen and sophomores, Sept. 12, 1953 for juniors and May 23, 1953 for seniors. The Dean is Currier McEwen, M.D.

Rochester

University of Rochester School of Medicine and Dentistry, 260 Crittendon Boulevard, Zone 20.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $800 per academic year. The registration for 1951-52 was 279; graduates 70. The last session began Sept. 17, 1951 and ended June 7, 1952. The next session will begin on Sept. 15, 1952 and will end on June 6, 1953. The Dean is George H. Whipple, M.D.

Syracuse

State University of New York at Syracuse College of Medicine, 766 Irving Avenue, Zone 10.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Assumed title Syracuse University College of Medicine in 1875, when a compulsory three year graded course was established. The College of Medicine was merged with the State University of New York on June 26, 1950 when the present title was assumed. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. Three years of a recognized college course are required for admission. The fees average $800 per academic year. The registration for 1951-52 was 254; graduates 44. The last session began Sept. 4, 1951 and ended June 2, 1952. The next session for all classes will begin Sept. 8, 1952 and end June 1, 1953. The Dean is William R. Willard, M.D.

NORTH CAROLINA

Durham

Duke University School of Medicine.—Organized in 1930. The first class was admitted Oct. 1, 1930. Coeducational. The premedical requirement is three years of college work. The academic year consists of three quarters each year. There is no summer quarter between the first and second year, but in the two clinical years the subjects of the autumn, winter and spring terms are repeated in the summer quarter. This accelerated schedule is optional, and students may take their first year, and three quarters in each of their subsequent years, and receive their certificates in four calendar years, or if they receive permission from the curriculum committee they may at the end of their second year take the clinical quarters given during the summers and receive their certificates in three and one quarter calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. Active duty with the Army, Navy or Public Health Service can replace the second year. The fees are $900 for three quarters beginning Sept. 29, 1952. The registration for 1951-1952 was 321; graduates 74. During 1952 the quarters begin Jan. 3, March 27, July 2, Oct. 1, and end March 17, June 9, Sept. 15 and Dec. 15. The next first year class will be enrolled Sept. 29, 1952 and will end June 6, 1953. The Dean is Wilburt C. Davison, M.D.

Winston-Salem

Bowman Gray School of Medicine of Wake Forest College, Zone 7.—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum. In 1941 the school was moved to Winston-Salem and expanded to a complete four-year medical school under its present name. Coeducational. Three years of college work are required for admission. Clinical departments operate four quarters in the year; however, the plan of operation makes it possible for students to be out of school during one quarter of each of the clinical years for research, for study elsewhere, or for earning money to help defray expenses for their education. Tuition is $750 per school year. The registration for 1951-1952 was 220; graduates 58. The last session for the freshman class began Oct. 1, 1951; sophomores Oct. 1, 1951; juniors and seniors July 9, 1951, and ended for freshmen, sophomores, juniors and seniors on June 14, 1952. The present junior and senior classes began July 14, 1952 and will end on June 13, 1953. The next freshman and sophomore classes will begin Oct. 6, 1952 and will end June 13, 1953. The Dean is C. C. Carpenter, M.D.

OHIO

Cincinnati

University of Cincinnati College of Medicine, Eden and Bethesda Avenues.—Organized in 1896 when the Medical College of Ohio (founded in 1819) became the Medical College of the University of Cincinnati. First class 1896. In 1909 the Miami Medical College (founded in 1852) was merged with the University of Cincinnati's Medical School. For several years after this merger the school was known as the Ohio-Miami Medical College of the University of Cincinnati and the present title was assumed in 1915. Coeducational since organization. Three years of collegiate work are the minimal requirements for admission but a bachelor's degree is strongly recommended. Tuition is as follows: for legal residents of Cincinnati $575 a year plus breakage fees ($125 additional for those not legal residents). The registration for 1951-52 was 355; graduates 87. The last session for freshmen and sophomores began Sept. 24, 1951 and ended May 31, 1952. The last session for juniors and seniors began Sept. 6, 1951 and ended May 31, 1952. The next session for juniors and seniors will begin Sept. 8, 1952 and end (juniors June 13, 1953) (seniors May 30, 1953), and for freshmen and sophomores will begin Sept. 22, 1952 and will end May 30, 1953. The Dean is Stanley Dorst, M.D.

Cleveland

Western Reserve University School of Medicine, 2109 Adelbert Road, Zone 6.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. The school assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. Students are required to have three years of college work for admission; four years preferred. The fees average $800 per academic year. The registration for 1951-52 was 323; graduates 84. The last session began Sept. 19, 1951 for freshmen and sophomores, and ended June 7, 1952. For juniors the last session began Sept. 12, 1951 and ended May 31, 1952. For seniors the last session began Aug. 27, 1951 and ended June 11, 1952. The next session for freshmen and sophomores will begin Sept. 17, 1952 and will end June 6, 1953. For juniors the session dates will be Sept. 10, 1952 to May 29, 1953, and for seniors from Aug. 25, 1952 to June 10, 1953. The Dean is Joseph T. Wearn, M.D.

Columbus

Ohio State University College of Medicine, Neil and Eleventh Avenues, Zone 10.—The present College of Medicine became a part of The Ohio State University in 1914. It incorporates all the previous medical college interests in central Ohio, standing upon a foundation of six medical schools: The Medical Department of Willoughby University of Lake Erie, 1834-1846; The Willoughby Medical College of Columbus, 1846-1847; The Starling Medical College, 1847-1907; the Columbus Medical College, 1875-1892; The Ohio Medical University, 1892-1907; Starling-Ohio Medical College 1907-1914. Graduates of these colleges by action of the Board of Trustees are considered alumni of The Ohio State University. Coeducational since organization. Three years of collegiate work are required for admission. Tuition fees average $495 per academic year and $225 additional for nonresidents. The registration for 1951-1952 was 458; graduates 83. The last session began Oct. 2, 1951 and ended June 6, 1952. The next session will begin Sept. 30, 1952 and end June 12, 1953. The Dean is Charles A. Doan, M.D.

OKLAHOMA

Oklahoma City

University of Oklahoma School of Medicine, 800 North East Thirteenth Street, Zone 4.—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Oklahoma, after which a clinical department was established at Oklahoma City through consolidation with the Medical School of Epworth University. The first class graduated in 1911. Coeducational since organization. A new medical school building and a second teaching hospital became available in 1928, and since September of that year the entire four year course has been given in Oklahoma City. Prerequisites for admission are three years—90 semester hours. The fees for residents of Oklahoma are $350; nonresidents $700. The registration for 1951-1952 was 316; graduates 54. The last session began Sept. 17, 1951 and ended June 2, 1952. The next session will begin Sept. 15, 1952 and will end June 1, 1953 for the first three classes. The senior session began June 16, 1952 and will end June 1, 1953. The Dean is Mark R. Everett, Ph.D.

OREGON

Portland

University of Oregon Medical School, 3181 S. W. Sam Jackson Park Road, Zone 1.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. Entrance requirement is three years of collegiate work. The total fees are $450 a year for residents of Oregon and $180 a year additional for nonresidents, plus a breakage deposit of $15 a year for the first two years. The registration for 1951-1952 was 294; graduates 69. The last session began Oct. 1, 1951 and ended June 13, 1952. The next session will begin Sept. 29, 1952 and will end June 13, 1953. The Dean is D. W. E. Baird, M.D.

PENNSYLVANIA

Philadelphia

Hahnemann Medical College and Hospital of Philadelphia, 235 North Fifteenth Street, Zone 2—Formed by the successive union of several institutions. The earliest original charter was obtained in 1848. The name Hahnemann Medical College was taken by one of these institutions in 1867. The present name was assumed in 1885. The first class graduated in 1849. Coeducational since 1941. A minimum of three years of collegiate work in an approved college of arts and sciences is required for admission. Fees for 1952-53 session are respectively for the first year, second year, third and fourth year classes $872, $872, $872, and $902.00. The registration for 1951-1952 was 364; graduates 77. The last session began for all students Sept. 10, 1951 and ended for the first and second year classes on June 7, 1952; for the third year class June 13, 1952 and for the fourth year class on June 17, 1952. The next session for all classes will begin Sept. 15, 1952 and will end for the first and second year class June 13, 1953, for the third year class June 12, 1953, and for the fourth year class June 18, 1953. The Dean is Charles L. Brown, M.D.

Jefferson Medical College of Philadelphia, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning in 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the board of trustees. For the class entering in 1952 the minimum entrance requirements will be three years of college work. The tuition fee is $800 a year. The registration for 1951-1952 was 651; graduates 160. The last session began for junior and senior students on Aug. 27, 1951 and ended June 3, 1952. The last session began for freshmen and sophomore students on Sept. 10, 1951 and ended for sophomores on June 21, 1952 and for freshmen on July 12, 1952. Graduation was June 12, 1952. The next session will begin for all classes on Sept. 8, 1952. The Dean is George Allen Bennett, M.D.

Temple University School of Medicine, 3400 North Broad Street, Zone 40. Organized in 1901. The first class graduated in 1904. Coeducational since organization. Three years of collegiate work are required for admission. The fees average $800 per academic year. The registration of 1951-1952 was 514; graduates 128. The last session began Sept. 10, 1951, and ended June 28, 1952. The next session will begin Sept. 8, 1952 and will end June 27, 1953. The Dean is William N. Parkinson, M.D.

University of Pennsylvania School of Medicine, Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in

America. In 1916, it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. Three years of collegiate work is required for admission. The tuition fee is $850, with a deposit fee of $15, a general fee including student health of $70 and a matriculation fee of $5. The registration for 1951-52 was 513; graduates 126. The last session began Sept. 4, 1951 and ended June 7, 1952. The next session will begin Sept. 2, 1952 and will end June 6, 1953. The Dean is John McK. Mitchell, M.D.

Woman's Medical College of Pennsylvania, 3300 Henry Avenue, Zone 29.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. At least three years of collegiate work are required for admission and candidates with a degree are given preference. The curriculum covers three years of thirty-six weeks each and one year of forty weeks. Total fees are $848 yearly. The registration for 1951-1952 was 187; graduates 43. The last session began Aug. 6, 1951 for fourth year and Sept. 12 for all others and ended June 12, 1952. The next session will begin Aug. 4, 1952 for fourth year and Sept. 10 for all others and will end June 11, 1953. The Dean is Marion Fay, Ph.D.

Pittsburgh

University of Pittsburgh School of Medicine, 3941 O'Hara Street.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. Entrance requirements are three years of collegiate work. The total fees are $700 each year. The registration for 1951-1952 was 387; graduates 91. The last session began Sept. 10, 1951 and ended June 11, 1952. The next session will begin on Sept. 8, 1952 and will end June 10, 1953. The Dean is William S. McEllroy, M.D.

SOUTH CAROLINA

Charleston

Medical College of South Carolina, 16 Lucas Street, Zone 16.—Organized 1823. The first class graduated in 1825. In 1832 a medical college bearing the title Medical College of the State of South Carolina was chartered and the two schools continued as separate institutions until they merged in 1838. Name changed by Act of General Assembly in February 1952 to Medical College of South Carolina. Classes were graduated in all years except 1862 to 1865, inclusive. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. At least three years of collegiate work are required for admission. The total fees average $432 each year for residents of South Carolina and $1,532 for nonresidents of the state. The registration for 1951-1952 was 240; graduates 57. The last session began on September 27, 1951 and ended June 5, 1952. The next session will begin on Sept. 25, 1952 and will end June 4, 1953. The President is Kenneth M. Lynch, M.D., and the Dean is John T. Cuttino, M.D.

TENNESSEE

Memphis

University of Tennessee College of Medicine, 847 Union Avenue, Zone 3.—Organized in 1876, at Nashville as Nashville Medical College. First class graduated in 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913, Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. Beginning in 1953 three years of collegiate work will be required for admission. The B.S. degree is conferred on students completing the science-medical curriculum of the University. The fees are $225 quarterly. For residents of the state the charge is reduced $75 each quarter. The registration for 1951-1952 was 652; graduates 150. During the next academic year the quarters begin September, January, March and July. The Dean is O. W. Hyman, Ph.D.

Nashville

Meharry Medical College, Eighteenth Avenue North and Meharry Boulevard, Zone 8 (For Negro Youth).—Organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. Three years of college work in a school of liberal arts are required for admission. Tuition and fees are: first year $615; second year $605; third year $595; fourth year $610. The curriculum covers four academic years of thirty-four weeks each. In September 1942, Meharry Medical College instituted the quarter system. The registration for 1951-1952 was 257; graduates 62. The last session began on Sept. 24, 1951 and ended on June 9, 1952. The next session begins Sept. 29, 1952 and will end on June 8, 1953. The President is Harold D. West, Ph.D., and the Dean is Daniel T. Rolfe, M.D.

Vanderbilt University School of Medicine, Twenty-first Avenue South at Edgehill, Zone 4.—The school was founded in 1874. The first class graduated in 1875. Coeducational since 1925. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully one year of work in the school of medicine. The course covers four academic years of nearly nine months each. The fees average $813 per academic year. The registration for 1951-1952 was 207; graduates 53. The last session began Sept. 24, 1951 and ended June 8, 1952. The next session will begin Sept. 22, 1952 and will end June 7, 1953. The Dean is John B. Youmans, M.D.

TEXAS

Dallas

Southwestern Medical School of the University of Texas, 2211 Oak Lawn.—Organized in 1943. The first class graduated March 20, 1944. Coeducational since organization. Became a branch of the University of Texas, Sept. 1, 1949. The medical school is operated on the regular program offering three terms of twelve weeks each per academic year. The tuition fees for residents average $125 per year. The nonresident fee is $378 per year. Three years of college work are required for admission. The registration for 1951-1952 was 375; graduates 72. The last session began Sept. 10, 1951 and ended May 31, 1952. The next session will begin Sept. 8, 1952 and will end June 1, 1953. The Dean is George N. Aagaard, M.D.

Galveston

University of Texas School of Medicine, 900 Strand.—Organized in 1890. The first class graduated in 1892. Coeducational since organization. Baccalaureate degree (B.A. or B.S.) will be required beginning with freshman class of September, 1952, provided military situation makes this possible. A few outstanding students with only three years of work may be accepted at the discretion of the Admission Committee. The fees average $97 per academic year, including health fees for medical care and hospitalization. The registration for 1951-1952 was 536; graduates 89. The last session began on Sept. 18, 1951 and ended June 6, 1952. The next freshman class will matriculate Sept. 16, 1952, and the sophomore and junior classes will matriculate on Sept. 22, 1952; the seniors will matriculate July 7, 1952; all classes will end June 6, 1953. The Vice-President is Chauncey D. Leake, Ph.D., and D. Bailey Calvin, Ph.D. is Dean of Student and Curricular Affairs.

Houston

Baylor University College of Medicine, Texas Medical Center.—Organized in 1900 at Dallas as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The school was moved to Houston in 1943. Coeducational since organization. The first class graduated in 1903. Entrance requirements are three years of collegiate work. The course covers four years of eight months each. The fees are respectively $656, $646, $631, $656. The registration for 1951-1952 was 355; graduates 83. The last session began Oct. 1, 1951 and ended June 9, 1952. The next session will begin Sept. 29, 1952 and will end June 8, 1953. The Dean is W. H. Moursund, M.D.

UTAH

Salt Lake City

University of Utah College of Medicine.—Organized in 1905. Coeducational since organization. Four-year curriculum established March, 1943. Three years of collegiate work are required for admission. The next freshman class will be admitted in September, 1952. All subsequent freshmen classes will begin in September of each year. Classes are scheduled during three academic quarters (12 weeks) each calendar year. Applications for admission (complete) must be submitted 9 months prior to opening date. The fees for each quarter average $455 (resident); there is a nonresident fee of $50 each quarter. The registration for 1951-1952 was 205; graduates 21 June, 1952, 28 December, 1952. The next session for freshmen will begin Sept. 29, 1952 and will end in June, 1953. The next session for sophomores will begin Sept. 29, 1952. The present session for juniors began in March, 1952 and will end in March, 1953. The next session for seniors will begin in March, 1953. The Dean is John Z. Bowers, M.D.

VERMONT

Burlington

University of Vermont College of Medicine, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. Three years of college work are required for admission. For residents of Vermont the tuition fee averages $567 per session. Nonresidents are charged an additional $150 each session. A $25 fee is charged for the doctor's degree. Registration for 1951-1952 was 179; graduates 38. The last session for freshmen, sophomores and juniors began Sept. 8, 1951 and ended June 15, 1952. The last senior class began June 25, 1951 and graduated June 15, 1952. The present senior class began June 27, 1952; the next freshman, sophomore and junior classes will begin Sept. 12, 1952 and all classes will end June 14, 1953. The Dean is George A. Wolf, Jr., M.D.

VIRGINIA

Charlottesville

University of Virginia Department of Medicine.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. Three years of college work are required for admission. For residents of Virginia the tuition and other required fees are $459 per academic year; for nonresidents, $859. The registration for 1951-1952 was 286; graduates 72. The last session began Sept. 14, 1951 and ended June 9, 1952. The next session will begin Sept. 19, 1952 and will end June 15, 1953. The Dean is Vernon W. Lippard, M.D.

Richmond

Medical College of Virginia, Twelfth and Broad Streets.—Organized in 1838 as the Medical Department of Hampden-Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. Coeducational since 1918. Classes were graduated in 1838 and in all subsequent years. Three years of collegiate work, as a minimum, are required for admission. Preference, however, is given to applicants with a baccalaureate degree. Fees average $560 per academic year. Nonresidents are charged an additional $325 each year. The registration for 1951-1952 was 365; graduates 102. The last session began Sept. 10, 1951 for second, third and fourth year classes and ended June 3, 1952. The last session for the first year class began Sept. 6, 1951 and ended June 3, 1952. The subsequent session will begin Sept. 8, 1952 for the first year class and Sept. 10, 1952 for the second, third and fourth year classes and will end June 2, 1953. The Dean is John B. Truslow, M.D.

WASHINGTON

Seattle

University of Washington School of Medicine, Seattle 5.—Established by the Legislature in 1945 and organized as one of the professional schools in the Division of Health Sciences of the University of Washington in 1946. The first class graduated in 1950. Coeducational. The minimum requirement for admission is three years of collegiate work. Tuition fees are $390 each year for residents of Washington and Alaska and $585 for nonresidents of these areas. Registration for 1951-1952 was 260; graduates 43. The first three classes were limited to 50 students but with the class entering in 1949 this number was raised to 75. The last session began Sept. 24, 1951 and ended June 14, 1952. The next session will begin Sept. 23, 1952 and will end June 13, 1953. The Dean is Edward L. Turner, M.D.

WISCONSIN

Madison

University of Wisconsin Medical School, 418 North Randall Avenue, Zone 6.—Organized 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. The entrance requirement is three years of collegiate work. Fees for the first, second and third years $310, for the fourth year $220 per academic year for residents. An additional fee of $300 per year is charged non-residents. Registration for 1951-1952 was 311; graduates 70. The last session for freshman, sophomore and junior students began Sept. 24, 1951 and ended June 16, 1952. The last senior class began June 25, 1951 and ended June 20, 1952. Freshman, sophomore and junior classes will begin Sept. 22, 1952 and will end June 15, 1953. The senior class began June 30, 1952 and will end June 19, 1953. The Dean is William S. Middleton, M.D.

Milwaukee

Marquette University School of Medicine, 561 North Fifteenth Street.—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $850 per academic year. The registration for 1951-1952 session was 383; graduates 90. The last session began Sept. 10, 1951, and ended May 31, 1952. The last senior class began June 11, 1951, and ended June 10, 1952. The next session for freshmen, sophomore and junior students will begin Sept. 15, 1952 and will end May 29, 1953. The 1952-1953 session for seniors began on June 9, 1952, and will end June 6, 1953. The Dean is John S. Hirschboeck, M.D.

APPROVED MEDICAL SCHOOLS IN CANADA

Alberta

University of Alberta Faculty of Medicine, Edmonton.—Organized in 1913. Coeducational since organization. Has given complete medical course since 1924. Tuition for the first and second years is $425 per session, and for the third and fourth years is $450 per session. The registration for 1951-1952 was 222; graduates 53. The last session began Sept. 4, 1951, and ended April 30, 1952. The next regular session will begin Sept. 2, 1952, and end April 30, 1953. The Dean is John W. Scott, M.D.

Manitoba

University of Manitoba Faculty of Medicine, Bannatyne Avenue, Winnipeg.—Organized in 1883 as Manitoba Medical College. First class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. Matriculation requirements include three years of collegiate work in the faculty of arts and sciences of a recognized university. The course extends over four years of eight months each and a hospital internship. The fees average $438 yearly. The registration for 1951-1952 was 272; graduates 83. The last session began Sept. 17, 1951 and ended May 20, 1952. The next session will begin on Sept. 8, 1952 and will end on May 15, 1953. The Dean is Lennox G. Bell, M.D.

Nova Scotia

Dalhousie University Faculty of Medicine, Morris Street, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. Requires for matriculation two years of arts. The regular medical course covers four years and a hospital internship of one year approved by the medical faculty. The fees average $415 yearly; nonresidents $250 additional fee. The last session for freshmen, sophomores and juniors began Sept. 4, 1951 and for seniors May 7, 1951; all classes ended May 13, 1952. The registration for 1951-1952 was 220; graduates 53. The next session for all classes will begin Sept. 3, 1952 and will end May 12, 1953. The Dean is H. G. Grant, M.D.

Ontario

Queen's University Faculty of Medicine, Kingston.—Organized in 1854. First class graduated in 1855 and a class graduated each subsequent year. The course consists of six sessions of 32 teaching weeks, the sixth session being devoted entirely to clinical work in the hospitals affiliated with the University. The latter is not considered an internship. Fees for each of the six years amount to $413.75. The degrees awarded are M.D., C.M. Freshmen will be admitted annually. Registration for 1951-1952 was 352; graduates 50. The last session began Sept. 17, 1951, and ended May 14, 1952. The next session will begin Sept. 15, 1952, and will end May 13, 1953. The last Convocation was held June 7, 1952. The Dean is G. Harold Ettinger, M.D.

University of Ottawa Faculty of Medicine, Ottawa.—Organized in September 1945. The degree of M.D. is conferred after 1 year premedical studies, 4 years medicine and 1 year of internship. The minimum academic requirements for admission to the premedical year are the Ontario Grade XIII Honour Matriculation, or equivalent certificates. Students who have obtained their Bachelor degree in Arts or in Science and who have completed the required courses in biology, chemistry and physics may be admitted to the first year of medicine. The registration for 1951-1952 in the medical and premedical years was 246. The next session for the premedical year will begin on Sept. 11, 1952 and for first, second, third and fourth medical years, on Sept. 9. Internship is from May 1 to May 1. The session for the premedical year will end in May 1953, for first, second and third medical years in June 1953 and the fourth medical year in April 1953. Students graduate June 1. The Dean is A. L. Richard, M.D.

University of Western Ontario Faculty of Medicine, 346 South Street, London.—Organized in 1881 as the Western University Faculty of Medicine. First class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The Faculty of Medicine has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The normal course of study covers two honor college years of nine months each and four years of nine months each in the Faculty of Medicine. The total fees to residents of Canada for the last four years are $515 a year. The registration for 1951-1952 was 240; graduates 60. The last session began Sept. 10, 1951 and ended May 17, 1952. The next session begins Sept. 8, 1952 and ends May 20, 1953. The Dean is J. B. Collip, M.D.

University of Toronto Faculty of Medicine, Toronto 5.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University Medical Department and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The degree of M.D. is conferred after 4 years in the study of medicine. Admission to the medical course is gained following honour matriculation and after two years in the study of premedical requisites in the University of Toronto. A certain number are admitted each year to the first medical year who hold arts degrees from recognized universities and who have covered the necessary work in the humanities and sciences. The B.Sc. (Med.) degree may be conferred for special work or investigation as a graduate degree, or under certain circumstances for an extra year's work as an undergraduate. The registration for 1951-1952 in the medical and premedical years was 918; graduates 175. The next session for first and second premedical years will begin on Sept. 23, 1952 and for first, second, third and fourth medical years on Sept. 22, 1952. The session for premedical years will end on May 2, 1953 and for medical years on May 16, 1953. Students will graduate annually in June. The Dean is J. A. MacFarlane, M.B.

June 8, 1953. The President is Harold D. West, Ph.D., and the Dean is Daniel T. Rolfe, M.D.

Sept. 12, 1952 and all classes will end June 14, 1953. The Dean is George A. Wolf, Jr., M.D.

Quebec

McGill University Faculty of Medicine, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1917. Three years of collegiate work are required for admission. The total fees for each of the four medical years are $525. The registration for 1951-1952 was 453; graduates 115. The last session began Sept. 5, 1951 and ended May 31, 1952 for the first three classes and May 3, 1952 for the senior class. The next session will begin Sept. 3, 1952 and will end May 30, 1953, for the first three classes and April 28, 1953 for the seniors. The Dean is G. Lyman Duff, M.D.

University of Montreal Faculty of Medicine, 2900 Mount Royal Boulevard, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by Act of Parliament, was merged with the Faculty of Medicine of Laval University at Montreal (organized in 1878). Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The requirements for admission are: B.A. degree or its equivalent, with a supplementary year in the Faculty of Pure Science or an entrance examination on the premedical subjects. An internship is required for graduation. The fees are $390 yearly for residents, and $465 yearly for nonresidents. The registration for 1951-1952 was 407; graduates 83. The last session began Sept. 11, 1951, and ended May 3, 1952. The next session will begin Sept. 9, 1952 and will end May 1, 1953. The Dean is Wilbrod Bonin, M.D.

Laval University Faculty of Medicine, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1952 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The medical course is five years in length, the first year being considered a premedical year. A hospital internship is required. The fees for each of the medical years average $300 for residents of Canada. Nonresidents are charged an extra fee of $200 each year. The premedical requirement is a B.A. degree or its equivalent. The registration for 1951-1952 was 551; graduates 111. The last session began Sept. 12, 1951 and ended June 1, 1952. The next session will begin Sept. 12, 1952 and will end June 1, 1953. The Dean is Charles Vézina, M.D.

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN THE UNITED STATES

MISSISSIPPI

University

University of Mississippi School of Medicine.—Organized in 1903. Coeducational since organization. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. Entrance requirement is three years of collegiate work or ninety semester hours of credit. Fees average $410.50 annually. There is a nonresident additional fee of $200. The school operates on an accelerated program by accepting two freshman classes each session. The registration for 1951-1952 was 117. The last session began July 16, 1951 and ended April 30, 1952. Additional freshman class was admitted Jan. 7, 1952 and will end Oct. 4, 1952. The sophomore session began June 11, 1951 and ended Feb. 23, 1952. An additional sophomore session began Nov. 19, 1951 and ended Aug. 2, 1952. The present freshman class began Jan. 7, 1952 and will end Oct. 4, 1952. The present sophomore class began May 26, 1952 and will end Jan. 31, 1953. The Dean is David S. Pankratz, M.D.

MISSOURI

Columbia

University of Missouri School of Medicine.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The entrance requirement is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are $249, for the second year $235. The registration for 1951-1952 was 81. The last session began Sept. 17, 1951 and ended June 5, 1952. The next session will begin Sept. 11, 1952 and will end June 7, 1953. The Acting Dean is M. Pinson Neal, M.D.

NEW HAMPSHIRE

Hanover

Dartmouth Medical School.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the Trustees of Dartmouth College. Courses of the third and fourth years were discontinued in 1914. Three years of college work and candidacy for the bachelor's degree are required for admission. Candidates for the A.B. degree in Dartmouth College may substitute the work or the first year in medicine for that of the senior year. The tuition is $800 for each year. The registration for 1951-1952 was 48. The last session began on Sept. 23, 1951 and ended June 8, 1952. The next session will begin Sept. 21, 1952 and will end June 14, 1953. The Dean is Rolf C. Syvertsen, M.D.

NORTH CAROLINA

Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department in Raleigh. The first class was graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of college work are normally required for admission. The tuition is $600 per year for residents; for nonresidents an additional $600 per year. The registration for 1951-1952 was 116. The North Carolina Legislature of 1947 appropriated funds for the expansion of the school to the full four years. The first junior class will register October, 1952. The last regular session began Sept. 17, 1951, and ended June 2, 1952. The next session will begin Sept. 22, 1952, and end on June 8, 1953. The Dean is W. Reece Berryhill, M.D.

NORTH DAKOTA

Grand Forks

University of North Dakota School of Medicine.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts are required for admission. The B.S. degree in combined arts-medical course is conferred at the end of the second year. The fees are $126.50 each year for resident students and $206.50 for nonresidents. The registration academic year 1951-1952 was 72. The last session began Sept. 24, 1951 and ended June 10, 1952. The next session will begin Sept. 22, 1952 and will end June 9, 1953. The Dean is W. F. Potter, M.D.

SOUTH DAKOTA

Vermillion

University of South Dakota School of Medical Sciences.—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of the medical course. Three years work in a college of liberal arts are required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to an A.B. degree: The B.S. degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine Course) A. B. degree. The tuition is $300 for the first year residents and $355 for second year residents; $510 for first year nonresidents, and $565 for second year nonresidents. Registration for 1951-1952 was 66. The last session began Sept. 3, 1951 and ended June 6, 1952. The next session for first and second year students will commence Sept. 1, 1952 and will end June 5, 1953 for first year students and will end Aug. 17, 1953 for second year students. (There is a seventeen day break between the end of the didactic year for second year students and the four weeks of clerkship and month of clinical teaching at the Veterans Administration Hospital in Sioux Falls, South Dakota.) The Dean is W. L. Hard, Ph.D.

WEST VIRGINIA

Morgantown

West Virginia University School of Medicine.—Organized in 1912. Gives the first two years of the medical course, but agreement has been made for the transfer of 25 students each year to the Medical College of Virginia. Coeducational since organization. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. Fees for residents of the state are, respectively, $258 and $268; nonresidents, $150 additional each year. The registration for 1951-1952 was 61. The last session began Sept. 17, 1951 and ended June 2, 1952. The next session will begin Sept. 15, 1952 and will end June 1, 1953. The Dean is Edward J. Van Liere, M.D.

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN CANADA

Saskatchewan

University of Saskatchewan School of Medical Sciences, Saskatoon.—Organized in 1926. Coeducational. Offers the first two years of the medical course. Two years of university premedical work is required for admission. The B.A. degree is conferred at the end of the second year. The fees are $380. The registration for 1951-1952 was 64. The last session for freshmen began Sept. 24, 1951 and ended June 21, 1952. The next session will begin Sept. 22, 1952 and will end June 17, 1953. The Dean is J. Wendell Macleod, M.D.

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FIFTY-SECOND ANNUAL REPORT ON MEDICAL EDUCATION

Since the beginning of the present century, the annual reports of the Council on Medical Education and Hospitals have constituted a unique documentation of the progress of medical education in the United States and Canada. The Council's 52nd annual report, which appears in this issue of THE JOURNAL, forms another important chapter of this series, which is relied on throughout the world by individuals, organizations, and governmental agencies for official statistics and basic information concerning medical education in the United States and Canada.

The report this year observes that medical education, having passed through the immediate postwar period, is now being conducted in what for the present era may be considered a normal or peacetime setting. It is appropriate therefore that the report review the substantial accomplishments of medical education in the seven years since the war, its present status, and the prospects for the future. The general public in its thoughts about medical education since the end of the war has been chiefly concerned with increasing the number of medical students and the financial needs of the medical schools. The schools, in addition to addressing themselves with considerable success to these problems, have been devoting much effort to a wide variety of activities designed to increase their contributions to society. The report summarizes these endeavors under six general headings.

Attention is called by the Council to the reports of the Committee for the Survey of Medical Education and its Subcommittee on Preprofessional Education, which will be published next year. It is anticipated that these reports will be major forces in stimulating and guiding the progress of medical education and preprofessional education in this country for the next 10 to 20 years.

As predicted in previous reports, further substantial increases in the number of students admitted to medical school, in total enrollments, and in the annual number of graduates were recorded last year, with new highs being established in all three categories. No large increase of the freshman class over its present record size of 7,441 students is forecast for the coming year. As the current large freshman classes progress through medical school, however, further increases are predicted in total enrollment and in the number of graduates beyond the current record figures of 27,076 and 6,080 respectively. Indeed, it is estimated that as early as next year the medical schools will be graduating approximately 6,500 new physicians annually. This figure may be compared with the average annual production of 5,140 new physicians in the 10 years prior to World War II. To make this expansion possible, the nation already has made an additional capital investment of well over 300 million dollars in its facilities for medical education since World War II.

The report points out the interest in the establishment of new medical schools that prevails and refers to 13 separate programs in various stages of development, which have as their objectives the creating of new medical schools or the expansion of schools of the basic medical sciences to full four year medical schools. Therefore, while the next year or two may see some leveling off in the number of students admitted to medical school, further substantial increases are definitely in prospect.

For the first time in recent years there were fewer than three applicants for each available place in the freshman classes of the medical schools. When only the students applying to medical schools for the first time are counted there were fewer than two applicants for every available place. The report again presents statistics to show that contrary to the popular conception many students with B and C averages in college gain admission to medical school. In fact only 30% of the medical students admitted to the 1951-1952 freshman class had A averages, a drop of 10% from the previous year.

An experiment that will be conducted in five schools next year in an effort to prepare students better in terms of fundamentals for roles as medical officers in the armed forces or as participants in civil defense programs is described. This program, sponsored and supported by special grants from several governmental agencies, if successful, may in another year or two be introduced in all medical schools.

Figures are presented in the Council's report that reveal that during the last year further real progress has been made in providing more funds for the support of the manifold activities of the medical schools. The basic budgets of the medical schools for the coming year total $80,885,000, as compared with $74,350,000 for the previous year. Other funds, including grants for research and teaching from outside agencies, bring to a total of over 120 million dollars, as compared with 109 million a year ago, the funds that will be available to the schools during the coming year. Except for approximately $3,650,000, this figure does not include the funds required to operate the teaching hospitals owned by or affiliated with the medical schools. As pointed out last year, not all of the reported increase in funds can be considered as net gain and not all schools have shared proportionately. Uncertainty as to future income and future costs is still a major concern. The report concludes, however, that it is not unrealistic to hope that the continuing efforts of the medical schools on their own behalf and the activities of such groups as the National Fund for Medical Education and the American Medical Education Foundation will insure reasonably adequate and stable financial support for the medical schools in the years ahead.

This year's report of the Council discusses at length some of the major problems encountered by American students who study medicine in foreign schools. Before enrolling in foreign schools, students are strongly urged

to acquire a good grasp of the language in which instruction is given and to determine from the state boards of medical licensure concerned whether the credentials they plan to secure will be acceptable in the states in which they intend to practice.

More postgraduate and refresher courses were offered last year than in any previous year. After dropping sharply in 1950-1951, attendance at such courses rose substantially during 1951-1952. A total of 65,935 physicians were enrolled in the 1,869 courses offered during the year.

Careful reading of the Council's entire report confirms the opinion expressed in the report that medical education has emerged from the war and the postwar period expanded and strengthened. It is clear that as a group the medical schools are today conducting programs of education and research that far surpass both qualitatively and quantitatively any of their previous efforts.

NEW TRENDS IN CLINICAL TEACHING

The clinical clerkship built around bedside teaching on the public wards of large general hospitals has formed the basic pattern for clinical instruction in American medical schools since its introduction by Osler at the Johns Hopkins University School of Medicine. There is little question that much of the improvement in medical education in this country in the last 50 years can be traced to the progressive adoption of this method of instruction by all medical schools. The current and recent reports of the Council on Medical Education and Hospitals indicate that many schools are seeking to broaden the student's experience in clinical medicine by supplementing the classical clinical clerkship with other assignments.

Until recently, provisions for teaching in dispensaries and outpatient departments have in most schools been conspicuously inferior to the programs developed for inpatient clerkships. With increasing recognition of the importance of acquainting the student with the problems of the ambulant patient, a number of schools have already instituted more intensive and effective teaching programs in their outpatient departments. It may be predicted that a general effort by all schools to raise the quality of teaching in outpatient departments to a point approaching that of teaching on the wards will be the next major advance in clinical teaching.

Another significant trend is the greater use that is being made of private patients for clinical clerkships. Forty-seven medical schools now assign students in the hospital to private as well as to service patients. This development, born partly of the need for more clinical material and partly of the belief that the student should be exposed to patients with widely varying social and economic problems, has not been greeted with enthusiasm by all teachers. Certain very definite practical problems, as pointed out in the current report of the Council, must be solved if teaching with private patients is to be as satisfactory as teaching with service patients.

Still another trend is the return to preceptorship programs in which a student spends several weeks observing and assisting an outstanding practitioner in his daily work. Twenty-five schools will offer such programs next year. Some of the problems involved in making the preceptorship a satisfactory educational experience were discussed in these columns two years ago.[1] The home medical care programs and family advisory programs, which have been instituted or strengthened in several schools in the last five years, represent still other efforts to give the student additional clinical experiences of a type and variety that usually cannot be provided on the wards of a hospital.

Assignments for periods of several weeks to local health departments, which give the student an opportunity to observe at close hand and individually the many activities included in a modern public health program, constitute another attempt to broaden the basic experience provided by the undergraduate medical course.

Experience is still too limited to evaluate fully the proper place of these various programs in the medical curriculum. Certainly the classical clinical clerkship will remain and should remain the backbone of clinical instruction. It provides, as no other arrangement can, nearly ideal control of the educational program through the close supervision that can be maintained over the teacher, the student, the patient, and the environment. It thus insures that the student will obtain a maximum of educational value from his assignment. It is significant, however, that there is a growing realization that this type of clinical instruction does have definite limitations. The various programs described above are attempts to compensate for these limitations and better prepare the student to be a competent, sophisticated practitioner with a good understanding of the wide range of medical problems and medical needs of modern society. These efforts will be followed with great interest by all who are concerned with medical education. Those that prove to be of value will become regular features of the medical curriculum; the others will eventually be discarded.

GI BILL—1952

New educational subsidies for veterans are now provided by the Veteran's Readjustment Assistance Act of 1952, passed by Congress on July 4, 1952. Subsidies are offered to men and women who have been deprived of educational or vocational training by being called to active service with the armed forces. A significant feature of the new bill is that all funds are paid directly to the veteran, who is then responsible for paying fees to the institution in which he is enrolled. Thus there is established for the first time a direct scholarship relationship between the federal government and the veteran.[1]

Another important feature is that the veteran must select a definite educational or vocational objective and is required to select a program of education or training leading toward that objective. A corollary to this emphasis on the pursuit of worth-while educational goals is the specific exclusion of such avocational programs as horseback riding, dancing, and bartending, on which so much time and money were wasted under the former GI bill. Before he can enroll in any program, the veteran

1. The Medical Schools and General Practice, editorial, J. A. M. A. **144**: 184 (Sept. 9) 1950.

1. The GI Bill of World War II provided for payment of subsistence allowances to the veteran; however, tuition fees were paid directly to the educational institution by the government.

must secure from the Veterans Administration both a certificate of eligibility and approval of his proposed program of study.

The new act became effective on Aug. 20, 1952, and covers a "basic service period" beginning June 27, 1950, and ending on such date as shall be determined either by Presidential proclamation or by concurrent resolution of Congress. Any veteran is eligible who had more than 90 days of active service during the "basic service period" and whose separation from service has been other than dishonorable. For each day of active service, the veteran is entitled to one and one-half days of education or training up to a total of 36 months (i. e., a full four year college course); veterans of World War II who have been recalled to active duty are permitted a total of 48 months of training. Full-time, part-time, apprentice, or on-the-job training may be selected. Entitlement to these educational benefits expires at the end of seven years after separation from service or seven years after the end of the "basic service period," whichever is earlier.

The education or training authorized under this act must be taken in "approved" institutions. Responsibility for approval of the educational institution rests with an approving agency to be established by each state or, when such an agency is not established, with an approving authority established under the Administrator of Veterans' Affairs. In order to be eligible for approval, the institution must, except in the case of public or tax-supported institutions, have been in existence for at least two years.

Many abuses inherent in the former bill appear to have been eliminated. Emphasis is placed on the pursuit of worth-while educational and vocational goals, and the veteran is protected against the many notorious fly-by-night institutions that preyed on World War II veterans.

One possible objectionable feature of the bill is the authority it gives the United States Commissioner of Education to prepare and publish for the use of the state approving agencies a list of the national and regional accrediting agencies and associations that he considers to be reliable authorities.

Since the standards of higher education in this country are largely established by these accrediting agencies and associations, it is clear that through this new power and the opportunity it creates for him to influence the policies of accrediting agencies the Commissioner of Education is in a position to exercise for the first time significant, although indirect, control over educational standards in practically all fields of higher education. It is understood that the commissioner is already preparing regulations and criteria that accrediting agencies must meet to secure his approval. While under the present legislation the commissioner can technically exercise this power only with respect to the approval of institutions for the purposes of the administration of the GI bill, it must be clear that any list he publishes will carry great weight in other areas. Further, a precedent has been established and it is not unforeseeable that in future legislation efforts may be made to broaden the scope of his official power in the field of higher education. Up to the present time the American system of education, in contrast to that in almost all other countries, has been conspicuous for its freedom from control or domination by any federal agency or official. Educators will undoubtedly scrutinize this new legislation and its administration to see if it marks the beginning of an effort to centralize control of education in the United States in the federal government.

PROTEIN NUTRITION IN SURGERY

The surgeon has long been interested in protein nutrition as evaluated by the state of nitrogen balance. Marked negative balances following surgical trauma were described by Cuthbertson [1] and later by Howard.[2] Recently, work in this field has been reviewed [3] and a report made of a series of 55 patients who were fed either orally or by a tube placed in either the stomach or the jejunum and who were studied for five days after operation. When the caloric intake was 30 calories per kilogram per day and the nitrogen intake below 300 mg. per kilogram per day, only 2 of the 37 subjects showed a positive balance; however, at or above these levels of feeding, 11 of the 18 subjects were in positive nitrogen balance. It is believed that these data indicate that the catabolic effect of an extensive operation such as a subtotal gastric resection could be overcome by generous intakes of protein and calories, e. g., 130 gm. of protein and 2,100 calories a day during the postoperative period.

Another means of attaining positive nitrogen balance in 11 patients who were to undergo major surgery (e. g., craniotomy or gastric resection) was to prime them with high-calory, high-protein diets for five days before the operation in the hope that they would store a sufficient amount of the nutrients to help tide them over the period of stress following the operation.[4] To insure consumption of these large amounts of nutrients by the patients during the period of over-feeding, emulsions of protein hydrolysate (amigen®) powder were frequently fed by stomach tube. In 10 of the 11 patients, the positive nitrogen balance that occurred in the preoperative five days outweighed the negative balance of the five postoperative days, so that the net balance was positive.

The question arises whether it is advantageous to maintain a patient in nitrogen balance following an operation. Rhoads [3] believes that there is no good objective evidence indicating that patients who are kept in positive nitrogen balance after surgical intervention are in better condition than those who are allowed to develop a mild negative balance, although it is commonly held that patients who were well nourished have fewer postoperative complications, are ambulatory earlier, and are able to leave the hospital sooner. It thus appears that, until further information is accumulated both from animal and from human studies involving the numerous phases of this problem, the clinical significance of a mild negative nitrogen balance following surgery cannot be finally evaluated.

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1. Cuthbertson, D. P.: Further Observations on Disturbance of Metabolism Caused by Injury, with Particular Reference to Dietary Requirements of Fracture Cases, Brit. J. Surg. **23**: 505 (Jan.) 1936.

2. Howard, J. E., and others: Studies on Fracture Convalescence: Nitrogen Metabolism After Fracture and Skeletal Operations in Healthy Males, Bull. Johns Hopkins Hosp. **75**: 156 (Sept.) 1944.

3. Rhoads, J. E.: Protein Nutrition in Surgical Patients, Federation Proc. **11**: 659 (June) 1952.

4. Koop, C. E.; Drew, J. H.; Riegel, C., and Rhoads, J. E.: Studies on Nutrition: The Effect of Preoperative Force-Feeding on Surgical Patients, Ann. Surg. **124**: 1165 (Dec.) 1946.

the educational institution by the government.

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MEDICAL NEWS

CALIFORNIA

Society News.—The Los Angeles Society of Allergy will meet Sept. 26 at 1925 Wilshire Blvd., at 8 p. m., when the following program will be presented: a film entitled "Treatment of Nasal Sinusitis"; "Immunologic Responses to Various Fractions of Tubercle Bacillus in Animals and Man" by John E. Forney, Ph.D., University of Southern California School of Medicine, Los Angeles; and presentation of problem cases for discussion.

Medical-Surgical Institute.—The third annual session of the San Joaquin Valley Regional Medical and Surgical Institute will be held Oct. 2-3 at the Hotel Californian in Fresno. Members of the faculty of Stanford University School of Medicine, San Francisco, will present the following program:

Oct. 2.—Russell R. Klein, Diagnosis and Treatment of Common Rectal Diseases.
Eugene M. Farber, Diagnosis and Treatment of Common Skin Disorders.
Dwight L. Wilbur, Diagnosis and Treatment of Hepatitis.
Gunther W. Nagel, Henry S. Kaplan, and Dwight Locke Wilbur, Symposium on Diseases of the Upper Gastrointestinal Tract.
Frederick J. Northway, Obstetrical Emergencies and Their Treatment.
Oct. 3.—Herbert N. Hultgren, Management of the Patient with Atherosclerosis.
Charles E. McLennan, Use and Abuse of Sex Hormones.
John A. Anderson, Allergies in Childhood.
Donald E. King, Principles in the Treatment of Common Fractures.
Charles E. McLennan, Treatment of Abnormal Uterine Bleeding.
Robert W. Churchill, Oxygen Therapy.

Thursday evening at a dinner in the Hotel Californian, Dr. Hale F. Shirley will discuss "Behavior Problems in Children."

ILLINOIS

Meeting of Ophthalmologists and Otolaryngologists.—The annual convention of the Central Illinois Society of Ophthalmology and Otolaryngology is being held Sept. 12-14 at the Abraham Lincoln Hotel, Springfield, under the presidency of Dr. Grover C. Otrich, Belleville. Topics under discussion include hemangioma of the orbit, cataract surgery, respiratory obstructions, Thornwaldt's disease, anoxia in otolaryngology, convergent squint, and bulbar poliomyelitis.

Saturday at 10 a. m. Dr. Paul A. Chandler of Boston will discuss narrow angle glaucoma. Buffet luncheon will be served at 12:30 p. m. Saturday and Sunday. Saturday evening there will be a cocktail hour followed by a banquet at which Mr. D. R. Blount, public relations department, International Shoe Company, St. Louis, will speak.

Chicago

Medical Lectures at Museum of Science and Industry.—Six lectures on medical subjects, prepared with the cooperation of the museum medical committee, will be presented for the public Sunday afternoons at 3 p. m. as follows:

Sept. 21, Hearing Problems from Infancy to Old Age, Francis L. Lederer.
Sept. 28, Eye Injuries in the Home, Derrick T. Vail Jr.
Oct. 5, Speech Disorders, Herbert K. Baker, Ph.D.
Oct. 12, Fluoridation in Prevention of Dental Caries, W. Philip Phair, D.D.S.
Oct. 19, Can Tuberculosis be Eradicated? Karl H. Pfuetze.
Oct. 26, Emotional Disturbances of Children, George L. Perkins.

Society News.—The newly elected officers of the Chicago Roentgen Society are: Drs. Benjamin D. Braun, president; Roger A. Harvey, vice-president; and Elbert K. Lewis, secretary-treasurer.——The Chicago Society of Allergy announces election of the following officers for 1952-1953: Dr. Milton M. Mosko, president; Dr. Abraham L. Aaronson, president-elect; and Dr. Simon S. Rubin, Gary, Ind., secretary-treasurer.——The annual dinner of the Chicago Medical Society will be held Sept. 20 in the Mural Room of the Hotel Morrison. A fellowship hour at 6 p. m. will precede the dinner.——The Milwaukee Pediatric Society has invited the Chicago Pediatric Society to attend a joint meeting in Milwaukee Sept. 24 at the Milwaukee Children's Hospital, 721 N. 17th St. Dr. Josef Warkany of Cincinnati will speak on "Search for the Causes of Congenital Malformation." A symposium with case presentations will be held from 4 to 6 p. m. A buffet supper will be served by the Pabst Brewing Company.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

MINNESOTA

Dedication at the Mayo Clinic.—An addition to the medical sciences building of the Mayo Clinic and Mayo Foundation at Rochester, Minn., will be dedicated Sept. 26 by Vannevar Bush, Sc.D., president of the Carnegie Institution of Washington, D. C. James Lewis Morrill, LL.D., president of the University of Minnesota, Minneapolis, Dr. Victor Johnson, director, Mayo Foundation for Medical Education and Research, and Theodore C. Blegen, Ph.D., dean of the Graduate School, University of Minnesota, will take part in the dedication exercises. There will be a dedication also of Frank C. Mann hall in the medical sciences building, named for Dr. Frank C. Mann, for years director of the Mayo Foundation Institute of Experimental Medicine and professor of experimental surgery in the Mayo Foundation, Graduate School, University of Minnesota. Speakers at this occasion will be Dr. Owen H. Wangensteen, professor of the department of surgery, University of Minnesota Medical School; Dr. Lester R. Dragstedt, Thomas D. Jones distinguished service professor, department of surgery, University of Chicago; and Dr. Chester Morse Jones, clinical professor of medicine, Harvard University Medical School, Boston. The addition to the medical sciences building brings together in a single modern, conveniently located structure, the laboratory facilities for medical education and research and provides these fundamental fields of medicine with an opportunity for closer collaboration with the various clinical and surgical fields.

MISSOURI

Academy Postgraduate Course.—The St. Louis Academy of General Practice announces the following lectures:

Sept. 18, 8 a.m., Some Aspects of Physiology, Harvey L. White (Missouri Baptist Hospital Auditorium).
Sept. 22, 8:30 p. m., Recognition, Evaluation, and Practical Considerations of Tuberculosis from the Viewpoint of General Practitioners, Paul Murphy (Missouri Baptist Hospital Auditorium).
Sept. 25, 8 a. m., Biochemistry (Interpretation), William H. Daughaday (St. Louis Medical Society Meeting Room).
Sept. 30, 8:30 p. m., What's New in Gynecology, Robert J. Crossen, (St. Louis Medical Society Meeting Room).
Oct. 2, 8 a. m., Neurology in Office Practice, James L. O'Leary, (Missouri Baptist Hospital Auditorium).
Oct. 7, 8:30 p. m., Pathology (Clinical), William J. Harrington (Missouri Baptist Hospital Auditorium).
Oct. 9, 8 a. m., Derangements of Blood Clotting: Current Concepts of Physiology and Clinical Laboratory Procedures, Walter G. Rice (St. Louis Medical Society Meeting Room).
Oct. 13, 8:30 p. m., Hematology, Carl V. Moore, (St. Louis Medical Society Meeting Room).
Oct. 16, 8 a. m., Physical Diagnosis in Pediatrics, Park J. White, (Missouri Baptist Hospital Auditorium).
Oct. 21, 8:30 p. m., Management of Psychiatric Patients in General Practice, Edwin F. Gildea, (Missouri Baptist Hospital Auditorium).
Oct. 23, 8 a. m., Practical Pharmacology for the General Practitioner, Arthur G. Zupko, Ph.D., (St. Louis Medical Society Meeting Room).
Oct. 27, 8:30 p. m., Pathology, Diagnosis, and Conservative and Operative Treatment of Intervertebral Disks, J. Albert Key (St. Louis Medical Society Meeting Room).

NEW JERSEY

Ophthalmologic Society Established.—Membership in the New Jersey Ophthalmologic Society, founded June 29, is open to members of the Medical Society of New Jersey whose chief medical interest is ophthalmology. Applications for membership are obtainable from Dr. Anthony R. Sherman, 671 Broad St., Newark 2.

freedom from control or domination by any federal

tients, Ann. Surg. 124: 1165 (Dec.) 1946.

Graduate Education Program.—According to Dr. Gerald I. Cetrulo, director of graduate medical education, Seton Hall University, South Orange, will sponsor a graduate medical education program under the auspices of the Essex County Medical Society. New Jersey physicians are requested to register early, since only those courses will be scheduled that have sufficient registration. Courses planned for October include proctology and gastroenterology (Mondays, 4:30 to 6 p. m.), unipolar lead electrocardiography (Mondays, 4 to 6 p. m.), roentgenology and fluoroscopy of the heart (Fridays, 4 to 6 p. m.), surgical anatomy (Fridays, 4 to 6 p. m.), surgical technique and principles of abdominal surgery (Fridays, 4 to 6 p. m.), surgical pathology (Saturdays, 9 to 11 a. m.), pathological review—for boards (Saturdays, 11 to 1 p. m.), biochemistry (Wednesdays, 4 to 6 p. m.), internal medicine (Wednesdays, 4 to 6 p. m.), and electrocardiography (Fridays, 5 to 6 p. m.). A course on endocrinology is planned for November (Mondays, 9 to 11 p. m.) and a course in gynecology (Saturdays, 3 to 5 p. m.) and surgical anatomy of the chest (Mondays, 4 to 6 p. m.) for February.

In addition to weekly didactic lectures, 4 to 6 p. m., student-physicians will be assigned on request to teaching rounds of certain Essex County hospitals, to pathology laboratories, and operative clinics for clinical study.

NEW YORK

Typhoid at Day Camp.—New York's first major outbreak of typhoid since 1946 occurred at the Hi-Li Day Camp, Far Rockaway, where 24 known victims and 22 suspected cases were reported to Aug. 21. The epidemic was traced to a 50-year-old woman cook, a carrier, employed at the camp since 1950. The camp has been closed for the rest of the summer.

Dr. Wheatley Heads Health Division.—Dr. George M. Wheatley, third vice-president of the Metropolitan Life Insurance Company, has accepted the chairmanship of the Health Division of the Welfare and Health Council of New York City. Dr. Wheatley formerly was in charge of the School Health Service of the New York City Department of Health. One of the founders of the American Council on Rheumatic Fever of the American Heart Association, he is now chairman of the executive committee of the council. He is also a member of the board of directors of the National Safety Council, chairman of the committee on accident prevention of the American Academy of Pediatrics, and a member of the governing council of the American Public Health Association.

Postgraduate Courses at Syracuse.—The department of medicine at the State University of New York at Syracuse, College of Medicine, announces its annual fall postgraduate course in medicine and electrocardiography, which will be given on Thursdays, Oct. 2 to Nov. 20, at the University Hospital of the Good Shepherd at Syracuse. The course in medicine (2 to 5 p. m.) will be on the "Significance of Symptoms," and the course in electrocardiography (7 to 9 p. m.) will be on basic electrocardiography. Physicians are welcome to attend the regular Thursday morning clinical conferences of the medical department at 9 a. m. and medical pathological conferences at 10:30 a. m.

The fee will be $15 for each course. Communications should be addressed to the Dean, State University of New York at Syracuse 10, N. Y.

New York City

"Rehabilitation Beach" Opened for Children.—The Institute of Physical Medicine and Rehabilitation of the New York University-Bellevue Medical Center has opened a small swimming pool and beach for disabled children. The swimming program is operated jointly by the institute and the Association for the Aid of Crippled Children, with the Red Cross helping in providing instructors.

Maternity Care in Hospitals.—A survey of maternity care in 104 hospitals was recently made by the New York Academy of Medicine. Only 2 hospitals received a rating of excellent (90 to 100); 22 were rated very good (75 to 89); 28, average (50 to 74), meeting minimum standards; 31, fair (25 to 49), failing in some standards; 19, poor to very poor (0 to 24), failing on most standards; and no information was available on 2. The report points out, however, that the rate of infant mortality in New York City is lower than the comparable rates in any of the cities of over 1 million population in the United States.

OHIO

Society News.—At the annual meeting of the Cincinnati Academy of Medicine, Sept. 16, Mr. Theodore Wiprud, executive secretary of the Medical Society of the District of Columbia, Washington, D. C., will speak on "What Price Good Will?"

Dr. Ferris Joins Emory University.—Dr. Eugene B. Ferris Jr., assistant director, department of internal medicine, Cincinnati General Hospital, since 1940, has been appointed professor of medicine and chairman of the department of medicine at Emory University School of Medicine, Atlanta. He was associated with the University of Cincinnati College of Medicine for five years before joining the administrative staff of Cincinnati General. Dr. Ferris has done research on hypertension, heart disease, and nephritis, and in 1936 he received the John Horsley Memorial Prize, University of Virginia, Charlottesville.

PENNSYLVANIA

Physicians' Art Exhibit.—An exhibition of Pennsylvania physicians' art will be shown in the Pennsylvania State Museum, Harrisburg, beginning Dec. 1 and continuing for six weeks. The Medical Society of the State of Pennsylvania will welcome paintings, etchings, pen and ink drawings, sculpture, wood carvings, ceramics, and other forms of art expression. Materials for exhibit should be sent to the society's headquarters at 230 State St., Harrisburg.

Philadelphia

Dr. Zondek to Lecture.—Dr. Bernhard Zondek, Jerusalem, Israel, will deliver the annual Phi Delta Epsilon Lecture of Sigma Chapter at the Auditorium of Temple University School of Medicine, Broad and Ontario Streets, Sept. 17 at 4 p. m. He will speak on "Problems of Ovarian Function and Gonadal Hormones." All physicians and students are welcome.

TEXAS

Pediatric Conference.—The Dallas Southern Clinical Society with the cooperation of the faculty of the Southwestern Medical School of the University of Texas, Dallas, will present a postgraduate conference in pediatrics and pediatric dermatology, Sept. 29 to Oct. 1 at the Melrose Hotel. Honor guest speakers will be Drs. Gilbert B. Forbes, professor of the department of pediatrics, Southwestern Medical School of the University of Texas, Dallas, and J. Lamar Callaway, professor of dermatology, The Duke University School of Medicine, Durham, N. C. Three symposiums will be held: Monday, 3:30 p. m., infantile eczema; Tuesday, 3 p. m., ringworm of the scalp; and Wednesday, 3 p. m., poliomyelitis. Tuesday's program will include a dermatology clinic at 1:30 p. m., a motion picture on scabies at 4:30 p. m., and at 6:30 p. m. a reception followed by a dinner, at which Dr. Forbes will discuss "Preventable Deaths in Childhood."

WISCONSIN

Meeting of Chest Physicians.—The annual meeting of the Wisconsin Chapter of the American College of Chest Physicians will be held Oct. 5 at the Hotel Schroeder in Milwaukee. The following program will be presented at 2 p. m.:

Herbert W. Schmidt, Rochester, Minn., Problems in Diagnosis of Chest Disease.

Edwin R. Levine, Chicago, Clinical Diagnosis and Treatment of Emphysema in the Patient Past 40.

Gorton Ritchie, Milwaukee, Tumors of the Chest in Children.

Edgar Mayer, New York, Treatment of Inoperable Cancer of the Lung.

John F. Briggs, St. Paul, Precordial Migraine.

At the annual dinner Dr. Aldo A. Luisado of Chicago will discuss "Clinical Application of Recent Advances in Cardiopulmonary Physiology."

State Medical Meeting in Milwaukee.—The annual meeting of the State Medical Society of Wisconsin will be held at the Schroeder Hotel, Milwaukee, Oct. 6-8, under the presidency of Dr. Albion H. Heidner of West Bend. Out-of-state speakers include: Drs. John A. Anderson, San Francisco; Claude S. Beck, Cleveland; Allan C. Barnes, Columbus, Ohio; Jacob K. Berman and Sprague H. Gardiner, Indianapolis; Paul R. Cannon, Joseph S. Haas, and Eugene T. McEnery, Chicago; David N. Danforth, Evanston, Ill.; Robert Elman, St. Louis; Wendell H. Hall and Reynold A. Jensen, Minneapolis; Anderson C. Hilding, Duluth, Minn.; Hayes Martin, New York; and Harold O. Peterson, St. Paul.

Special teaching demonstrations will be held daily at 9 a. m.: Monday, toxemias of pregnancy; Tuesday, breech extraction; and Wednesday, antidote to fetal depression induced by obstetric analgesics. Hospital staff conferences will be conducted at 10:15 a. m. on Monday, and the general session will begin at 2 p. m. There will be a smoker and entertainment at 8:30 p. m.

On Tuesday at 10:15 a. m. there will be a symposium on diagnosis and therapy of infectious diseases and a symposium on obstetrics and gynecology. The annual dinner will be addressed by Mr. C. Walter McCarty, editor of the *Indianapolis News*, on "Journalistic Obstetrics." On Wednesday at 10:15 a. m. the following symposiums will be held: (1) Developmental Requirements in Childhood, (2) Significant Surgical Problems, and (3) Radiologic Problems—Myelography.

Luncheons for special groups will be held as follows: Monday, past presidents of the state society; Tuesday, CAA medical examiners and pathologists; and Wednesday, ophthalmology and otolaryngology (with section meeting). On Monday Dr. Chester C. Schneider and Mr. Kenneth Grubb, Milwaukee, will discuss "Legal Aspects of Medical Practice."

GENERAL

Neurosurgeons Hold Annual Meeting.—The annual meeting of the Neurosurgical Society of America will be held at the Cloister, Sea Island, Ga., Sept. 18-20, under the presidency of Dr. Joseph F. Dorsey of Boston. The program includes panel discussions on the treatment of vascular anomalies, planned hypotension in surgery, clinical problems as related to diagnosis, as well as discussions of arteriography versus ventriculography in the diagnosis of brain tumors, and the present status of radioactive isotopes in brain tumor diagnosis.

Course in Human Relations.—The Academy of Medicine of Toledo and Lucas County announces six lectures on "Better Doctor-Patient Understanding," to be delivered by Ernest Dichter, Ph.D., New York, Oct. 1-2, in the academy's new headquarters at Collingwood and Central avenues in Toledo, Ohio. Dr. Dichter is the author of the Dichter report, based on a study of physician-patient relations, which he conducted for the California Medical Association. There will be no fee for the lecture series. Information may be obtained from the Academy of Medicine, 3101 Collingwood Ave., Toledo 10, Ohio.

Southwest Regional Cancer Conference.—The annual Southwest Regional Cancer Conference will be held at the Hilton Hotel, Fort Worth, Texas, Sept. 24-25. Among the speakers are Dr. Hugh F. Hare, head of the department of radiology, Lahey Clinic, Boston; Dr. John Henderson Lamb, associate professor of dermatology and syphilology, University of Oklahoma, Oklahoma City; and Dr. Willis J. Potts, surgeon in chief, Children's Memorial Hospital, Chicago. A tumor clinic teaching conference will be held Wednesday evening, with all guests participating. The clinical conference as well as a luncheon with a question and answer period will take place Thursday. There is no registration fee. Information may be secured from the Southwest Regional Cancer Conference, 209 Medical Arts Bldg., Fort Worth, Texas.

Course in Radioisotope Techniques.—A course on advanced radioisotopes techniques in biochemical research will be given by the special training division of the Oak Ridge (Tenn.) Institute of Nuclear Studies, Nov. 3-14. The first week of the course will be devoted to techniques centering around the use of carbon 14. The second week will be concerned with the other major isotopes used in biochemical research. Applications must be filed by Oct. 1. Application blanks and other information may be obtained from Ralph T. Overman, Ph.D., Chairman, Special Training Division, Oak Ridge Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tenn.

Meeting of Society of Medical Writers.—The annual meeting of the American Medical Writers' Association will be held at the Hotel Jefferson, St. Louis, Oct. 1, under the presidency of Dr. Arkell M. Vaughn, Chicago. In a symposium at 2 p. m. the following papers will be presented:

J. Linwood Cutler, M.A., Columbia, Mo., Why Write.
Walter C. Alvarez, Chicago, What a Medical Writer Should Not Do.
Theodore Peterson, M.S., Urbana, Ill., Editing the Medical Manuscript.
Harold Swanberg, Quincy, Ill., Medical Writing and a Medical Manuscript Editing Service.

A fellowship hour will precede dinner, after which the association's Honor Award and Distinguished Service Award will be presented. Dr. W. W. Bauer, Chicago, editor of *Today's Health*, will speak on "Wanted More Lay Medical Writers."

North Pacific Society to Meet in Sun Valley.—The North Pacific Society of Internal Medicine will hold its fall meeting Sept. 19 and 20 in Sun Valley, Idaho. The following papers will be presented:

Multiple Sclerosis, Wallace W. Lindahl, Seattle.
Indices of Blood Formation and Destruction, Clement A. Finch, Seattle.
Acute Myocarditis, William E. Leede, Seattle.
Biliverdin Icterus, Evrel A. Larson, Bellingham, Wash.
Case Report of Waterhouse-Friderichsen Syndrome, John K. Martin, Seattle.
Exophthalmus of Exophthalmic Goiter—A Case, William E. Watts, Seattle.

At the members' banquet, to be held at Sun Valley Lodge on Friday at 7:30 p. m., Dr. William Boyd of Vancouver, British Columbia, Canada, will speak on "Why Men Climb Mountains." Dr. Boyd will speak on "The Cause of Cancer" on Saturday morning.

Mississippi Valley Meeting.—The annual meeting of the Mississippi Valley Medical Society and the Tri-State Post-Graduate Assembly of Illinois, Missouri, and Iowa will be held in the Jefferson Hotel, St. Louis, Oct. 1-3. The program includes some 80 lectures, clinical presentations, and scientific and technical exhibits and lists 33 instructors. The banquet on Thursday will be addressed by: Dr. Leo P. A. Sweeney, Palos Park, Ill., president, Illinois State Medical Society; J. William Thompson, St. Louis, president, Missouri State Medical Association; Thomas F. Thornton, Waterloo, Iowa, past president, Iowa State Medical Society; and Edward J. McCormick, Toledo, Ohio, President-Elect of the American Medical Association.

At the roundtable luncheons on Thursday and Friday, all guest speakers of each day will participate; a question and answer period will be included. Physicians are cordially invited. There will be no registration fee.

Conference On Industrial Health.—The annual Gulf Coast Regional Conference in Industrial Health will be held at the Rice Hotel, Houston, Texas, Sept. 24-27. Wednesday afternoon will be devoted to a symposium on transportation and Wednesday evening to a symposium on alcoholism. The Industrial Wastes Symposium Thursday (9 a. m.-5 p. m.) will include a panel discussion on legal aspects of air pollution, an air pollution control movie, and a discussion on air pollution control. A symposium on pulmonary diseases will be held Thursday from 9 a. m. to 12 noon. At the same time on Friday there will be a legal symposium on industrial health problems and a conference on labor-management and industrial health.

An all-inclusive advance registration fee of $10.50 (acceptable up to noon, Sept. 23) will cover registration, luncheon, and a copy of the conference proceedings. Information may be obtained by writing the Industrial Health Conference, P. O. Box 2371, Houston, Texas.

Clinical Society to Meet in Kansas City.—The Kansas City Southwest Clinical Society will hold its annual meeting Oct. 6-9 in Kansas City, Mo., under the presidency of Dr. John A. Growdon. Guest speakers participating in the clinical-pathologi-

cal conference on Monday include Drs. William D. Boyd, Vancouver, British Columbia, Canada; Robert Elman, St. Louis; Leo H. Garland, San Francisco, who will also serve as moderator for the panel discussion on chest emergencies; Arthur Grollman, Dallas, and Samuel F. Marshall, Boston, both of whom will also participate in the symposium on gastric ulcer, the latter as moderator.

On Wednesday there will be a panel discussion on chest emergencies. Other guest speakers participating in this panel include Drs. Brian B. Blades, Washington, D. C.; Paul H. Holinger, Chicago; John T. King, Baltimore; and James E. M. Thomson of Lincoln, Neb. F. Bayard Carter, Durham, N. C., will serve as moderator for the panel discussion on vaginal discharge, which will also be held on Wednesday.

A symposium on gastric ulcer will be held on Thursday and will include, in addition to previously noted participants, Drs. George Crile Jr. of Cleveland and William A. Sodeman, New Orleans. Other guest speakers are as follows: Drs. William L. Bradford, Rochester, N. Y.; T. Leon Howard, Denver; Willard O. Thompson, Chicago; Waltman Walters, Rochester, Minn. Roundtable luncheons will be held daily at the Hotel President, and there will be daily radio broadcasts and a television community forum.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States, its territories, and possessions in the weeks ended as indicated:

Area	Aug. 23, 1952	Aug. 16, 1952	Aug. 25, 1951
New England States			
Maine	15	14	4
New Hampshire	2	2	3
Vermont	..	1	5
Massachusetts	54	32	21
Rhode Island	1	6	3
Connecticut	41	48	20
Middle Atlantic States			
New York	209	184	109
New Jersey	59	61	32
Pennsylvania	92	95	46
East North Central States			
Ohio	203	204	83
Indiana	79	77	27
Illinois	272	223	90
Michigan	300	244	85
Wisconsin	127	143	107
West North Central States			
Minnesota	219	206	43
Iowa	246	187	38
Missouri	83	39	55
North Dakota	16	19	7
South Dakota	81	18	4
Nebraska	168	114	32
Kansas	101	79	63
South Atlantic States			
Delaware	13	5	..
Maryland	11	5	5
District of Columbia	15	17	14
Virginia	58	53	10
West Virginia	46	34	12
North Carolina	27	20	15
South Carolina	7	6	11
Georgia	43	48	47
Florida	23	22	13
East South Central States			
Kentucky	119	167	31
Tennessee	38	23	36
Alabama	15	8	54
Mississippi	61	29	53
West South Central States			
Arkansas	20	23	36
Louisiana	45	60	39
Oklahoma	75	68	34
Texas	162	214	84
Mountain States			
Montana	11	15	6
Idaho	19	14	7
Wyoming	5	5	15
Colorado	36	36	114
New Mexico	29	22	14
Arizona	23	17	25
Utah	10	7	53
Nevada	1	3	1
Pacific States			
Washington	81	70	17
Oregon	23	18	11
California	121	105	133
Territories and Possessions			
Alaska	..	..	1
Hawaii	1	2	..
Puerto Rico	2	1	..
Total	3,508	3,113	1,768

CANADA

A Course in Tuberculosis.—The National Sanitarium Association postgraduate course in tuberculosis, Oct. 21-24, will be held for three days at the Toronto Hospital for Tuberculosis, Weston, Ontario, with an additional day to include the program for the annual meeting of the Ontario Laennec Society to be held at the Royal York Hotel, Toronto. Subjects for consideration include advanced knowledge of the bacteriology and pathology of tuberculosis, epidemiology, differential diagnosis of tuberculosis, and treatment, private practice in internal medicine, thoracic, orthopedic, genitourinary surgery, public health, and allied fields. Information can be obtained from the Medical Superintendent, Toronto Hospital for Tuberculosis, Weston, Ontario.

FOREIGN

Prize Offered in France.—The Academie Duchenne de Boulogne announces that its prize of 10,000 francs (about $30) for the best 1952 work dealing with the medical sciences will be awarded in January, 1953. The dissertation, one that has not been previously rewarded, must be in French (two typewritten copies) and must be sent before Oct. 31 to Dr. Becart, Secrétaire de l'Académie, 37 Bis Bd. Berthier, Paris XVII, France.

Vienna-American Medical Group Reorganized.—The American Medical group in Vienna has been reorganized and is again preparing to offer Americans postgraduate courses in conjunction with the University of Vienna (Vienna Academy of Medicine). The unit is now known as the American Medical Society. Mr. Ernest W. Spaulding, first secretary to the American embassy, has been elected honorary president of the association, and Dr. M. Arthur Kline serves as executive secretary. Information may be obtained by addressing him at the American Medical Society, % Academy of Medicine, Allgemeines Krankenhaus, Vienna 1X, Austria.

Occupational Health Survey in Egypt.—Dr. A. Bruusgaard, chief medical inspector of factories for Norway since 1946, has been appointed jointly by the World Health Organization and the International Labor Organization to conduct an occupational health survey in Egypt in cooperation with the Ministry of Public Health and the Department of Labor in the Ministry of Social Affairs. At the conclusion of his survey, Dr. Bruusgaard will prepare recommendations for the Egyptian government and WHO to be used as the basis of a long-term program of occupational health. Dr. Bruusgaard has studied occupational health problems in the United States and, under a grant from the Rockefeller Foundation, in the United Kingdom.

Commission to Study Physical Disability in Norway.—The government of Norway has formed a royal commission to study and recommend improvements in both state and voluntary services for the physically disabled in that nation. The work will start with research to determine the amount and types of physical disability in Norway, the significance of disability to the individual and to society, and ways and means to improve the situation. The Norwegian parliament has allocated funds to provide a traveling team of specialists to visit regions where poliomyelitis has been prevalent in recent years. Rehabilitation for those disabled by poliomyelitis and other causes will be planned by the team, which began its work in June.

Tuberculosis and Malaria Operations in Sarawak.—A BCG vaccination team and a malaria adviser have been sent by the World Health Organization to Sarawak on the island of Borneo to assist the government in operations for the control of tuberculosis and malaria, two of the most serious health problems of this Borneo territory. The team will stay in Sarawak about nine months demonstrating the most suitable method of tuberculin testing and BCG vaccination, and training local personnel to carry on the work. The WHO malaria adviser will remain for two years directing a pilot project to determine whether DDT residual spraying of houses is effective in controlling malaria in Sarawak. The BCG campaign will be conducted by Dr. Ole Hagen of Norway, team leader, and Miss Eva Friis of Denmark, BCG nurse. The team will conduct a survey and administer protective vaccination to about 50,000 people in major centers of

the colony. The anti-malaria operations will be conducted by Dr. Julian de Zulueta of Madrid, who for the past five years has been working for the Ministry of Hygiene of Colombia, and the Rockefeller Foundation.

Interim Meeting of Aero Medical Association.—The Aero Medical Association will hold an interim meeting in Paris Sept. 26-28, under the presidency of Dr. William R. Stovall of Washington, D. C. The meeting, which is sponsored by the French language section of the association, will convene at the Paris Medical School. Among the topics to be discussed are functional examination of the lungs in the selection of aircraft personnel; fatigue in pilots; vertebral traumatism; evaluation of visual aptitude in aviators; study of induced loss of equilibrium in prospective pilots and pursuit fliers; oxygen deficit and nervous dysfunction; suprarenal function and anoxia; effect of corticotropin and cortisone on frogs subjected to the stress of hypoxia and cold; variations in blood mass and in interstitial fluids under influence of anoxemia; summary of systematic electrocardiographic tests on aircraft personnel of a commercial airline; electrocardiographic changes in aircraft personnel traveling constantly in pressurized cabins; modes of development of cochlear deafness in aviators; late results of middle ear traumas caused by sudden pressure changes; and auditory disturbances in aeronautic personnel: traumatovibratory syndrome.

MEETINGS

AMERICAN ACADEMY FOR CEREBRAL PALSY, Durham, N. C., Oct. 2-4. Dr. Meyer A. Perlstein, 4743 North Drake Ave., Chicago 25, Secretary.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, Chicago, Oct. 12-17. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Executive Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Palmer House, Chicago, Oct. 20-23. Dr. E. H. Christopherson, 610 Church St., Evanston, Ill., Secretary.

AMERICAN ASSOCIATION OF BLOOD BANKS, Hotel Schroeder, Milwaukee, Oct. 9-11. Miss Marjorie Saunders, 3500 Gaston Avenue, Dallas 1, Texas, Secretary.

AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS, Shoreham Hotel, Washington, D. C., Oct. 13-17. Miss Doris Gleason, 510 N. Dearborn St., Chicago 10, Executive Secretary.

AMERICAN CLINICAL AND CLIMATOLOGICAL ASSOCIATION, Elmira, N. Y., Oct. 16-18. Dr. Marshall N. Fulton, 124 Waterman St., Providence 6, R. I., Secretary.

AMERICAN COLLEGE OF SURGEONS, Waldorf-Astoria, New York, Sept. 22-26. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Secretary.

AMERICAN FRACTURE ASSOCIATION, Hotel Sherman, Chicago, Oct. 6-9. Dr. H. W. Wellmerling, 219 N. Main St., Bloomington, Ill., Secretary.

AMERICAN HOSPITAL ASSOCIATION, Philadelphia, Sept. 15-18. Mr. George Bugbee, 18 East Division St., Chicago 10, Executive Director.

AMERICAN MEDICAL WRITERS' ASSOCIATION, Jefferson Hotel, St. Louis, Oct. 1. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

AMERICAN PUBLIC HEALTH ASSOCIATION, Public Auditorium, Cleveland, Oct. 20-24. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

AMERICAN ROENTGEN RAY SOCIETY, Shamrock Hotel, Houston, Texas, Sept. 23-26. Dr. Barton R. Young, Germantown Hospital, Philadelphia 44, Secretary.

AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS, Chicago, Oct. 13-17. Dr. Clyde G. Culbertson, 1040 W. Michigan St., Indianapolis, Secretary.

ANNUAL GULF COAST REGIONAL CONFERENCE ON INDUSTRIAL HEALTH, Rice Hotel, Houston, Tex., Sept. 24-27. Dr. W. H. Hamrick, P. O. Box 2371, Houston, Tex., Chairman.

ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS OF AMERICA, Los Angeles, Oct. 21-23. Dr. Henry B. Kirkland, P. O. Box 594, Newark 1, N. J., Secretary.

COLLEGE OF AMERICAN PATHOLOGISTS, Drake Hotel, Chicago, Oct. 13-17. Dr. M. G. Westmoreland, 203 N. Wabash Ave., Chicago 1, Executive Secretary.

CONSTANTINIAN SOCIETY, Lake Placid Club, Lake Placid, N. Y., Oct. 1-4. Dr. C. F. Shook, P. O. Box 1035-36, Toledo 1, Ohio, Secretary.

DISTRICT OF COLUMBIA, MEDICAL SOCIETY OF THE, Hotel Statler, Washington, Sept. 29-Oct. 1. Mr. Theodore Wiprud, 1718 M St. N.W., Washington, Secretary.

GREAT FALLS MEDICAL-SURGICAL CONFERENCE, Great Falls, Mont., Oct. 24-25. Dr. William E. Sullens, Box 1066, Great Falls, Mont., Chairman.

GULF COAST CLINICAL SOCIETY, San Carlos Hotel, Pensacola, Fla., Oct. 16-17. Dr. Dale E. York, 21½ E. Wright St., Pensacola, Fla., Secretary.

INDIANA STATE MEDICAL ASSOCIATION, Murat Temple, Indianapolis, Oct. 28-30. Mr. James A. Waggener, 23 E. Ohio St., Indianapolis 4, Executive Secretary.

KANSAS CITY SOUTHWEST CLINICAL SOCIETY, Kansas City, Mo., Oct. 6-9. Dr. Galen M. Tice, 630 Shukert Bldg., Kansas City, Kansas, Secretary.

KENTUCKY STATE MEDICAL ASSOCIATION, Columbia Auditorium, Louisville, Oct. 7-9. Dr. Bruce Underwood, 620 S. Third St., Louisville 2, Secretary.

MICHIGAN STATE MEDICAL SOCIETY, Book-Cadillac Hotel, Detroit, Sept. 24-26. Dr. L. Fernald Foster, 606 Townsend St., Lansing 15, Secretary.

MISSISSIPPI VALLEY MEDICAL SOCIETY, Jefferson Hotel, St. Louis, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

MONTANA MEDICAL ASSOCIATION, Florence Hotel, Missoula, Sept. 18-21. Mr. L. R. Hegland, 104 North Broadway, Billings, Executive Secretary.

NATIONAL GASTROENTEROLOGICAL ASSOCIATION, Hotel Statler, New York, Oct. 20-22. Dr. Sigurd W. Johnsen, 1819 Broadway, New York 23, Secretary.

NEUROSURGICAL SOCIETY OF AMERICA, The Cloister, Sea Island, Ga., Sept. 18-20. Dr. C. D. Hawkes, 22 North Manassas St., Memphis 5, Tenn., Secretary.

NEW ENGLAND OBSTETRICAL AND GYNECOLOGICAL SOCIETY, Hotel Somerset, Boston, Oct. 29. Dr. Carmi R. Alden, 270 Commonwealth Ave., Boston 16, Secretary.

NORTH PACIFIC PEDIATRIC SOCIETY, Challenger Inn, Sun Valley, Idaho, Sept. 19-20. Dr. S. Gorham Babson, 1107 S.W. 13th Ave., Portland 5, Ore., Secretary.

NORTH PACIFIC SOCIETY OF INTERNAL MEDICINE, Sun Valley, Idaho, Sept. 19-20. Dr. Robert L. King, 1115 Terry Ave., Seattle 1, Wash., Secretary.

NORTH TEXAS-SOUTHERN OKLAHOMA FALL CLINICAL CONFERENCE, Wichita Falls, Texas, Sept. 17. Dr. E. Aubrey Cox, Hamilton Bldg., Wichita Falls, Texas, Chairman.

OKLAHOMA CITY CLINICAL SOCIETY, Biltmore Hotel, Oklahoma City, Oct. 27-30. Dr. N. L. Miller, 512 Medical Arts Bldg., Oklahoma City, Director of Clinics.

OMAHA MID-WEST CLINICAL SOCIETY, Hotel Paxton, Omaha, Oct. 27-31. Dr. Payson S. Adams, 1031 Medical Arts Bldg., Omaha 2, Director of Clinics.

OREGON STATE MEDICAL SOCIETY, Portland, Oct. 8-11. Dr. Robert F. Miller, 833 S.W. 11th Ave., Portland 5, Secretary.

PENNSYLVANIA, MEDICAL SOCIETY OF THE STATE OF, Bellevue-Stratford Hotel, Philadelphia, Sept. 28-Oct. 2. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh 22, Secretary.

SOUTHERN PSYCHIATRIC ASSOCIATION, White Sulphur Springs, W. Va., Nov. 2-5. Dr. N. M. Owensby, Medical Arts Bldg., Atlanta 3, Ga., Secretary.

SOUTHWESTERN MEDICAL ASSOCIATION, Albuquerque, N. M., Oct. 30-Nov. 1. Dr. W. W. Schuessler, 1415 First National Bank Bldg., El Paso, Texas, Secretary.

SOUTHWESTERN SURGICAL CONGRESS, Baker Hotel, Dallas, Texas, Oct. 20-22. Miss June Marchant, 1227 Classen St., Oklahoma City, Executive Secretary.

TRI-STATE MEDICAL SOCIETY OF TEXAS, LOUISIANA AND ARKANSAS, Texarkana, Texas, Oct. 2-3. Dr. Albert M. Hand, 619 Main St., Texarkana, Texas, Secretary.

VIRGINIA, MEDICAL SOCIETY OF, Jefferson Hotel, Richmond, Sept. 28-Oct. 1. Mr. Robert L. Howard, 1105 West Franklin St., Richmond, Executive Secretary.

WASHINGTON STATE MEDICAL ASSOCIATION, Olympic Hotel, Seattle, Sept. 13-17. Dr. Bruce Zimmerman, 338 White-Henry-Stuart Bldg., Seattle, Secretary.

WISCONSIN, STATE MEDICAL SOCIETY OF, Hotel Schroeder, Milwaukee, Oct. 6-8. Mr. Charles H. Crownhart, 704 E. Gorham St., Madison, Secretary.

INTERNATIONAL

AERO MEDICAL ASSOCIATION INTERIM MEETING, Paris, France, Sept. 26-28. Dr. Armand Robert, 2 Rue Marbeuf, Paris 8e, France, Secretary.

AMERICAN CONGRESS OF INDUSTRIAL MEDICINE, Rio de Janeiro, Brazil, Sept. 20-28. Prof. Dr. Jose Pedro Reggi, Calle Arenales No. 981 Buenos Aires, Argentina, Director General.

CONGRESS OF INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Cavalier Hotel, Virginia Beach, Virginia, U. S. A., Sept. 22-25. Miss Laurette McMechan, 318 Hotel West Lake, Rocky River (Cleveland 16) Ohio, Executive Secretary.

EUROPEAN CONGRESS OF CARDIOLOGY. University of London, Bloomsbury, W.C.1, England, Sept. 10-12. Dr. K. Shirley Smith, 35 Wimpole St., London, W.1, England, Secretary.

EUROPEAN SOCIETY OF CARDIOVASCULAR SURGERY, Strasbourg, France, Oct. 3-4. Sir James Learmonth, Department of Surgery, University New Buildings, Edinburgh 8, Scotland.

INTER-AMERICAN CONGRESS OF PUBLIC HEALTH, Havana, Cuba. Sept. 26-Oct. 1. Pan-American Sanitary Bureau, 1501 New Hampshire Ave. N.W., Washington 6, D. C.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Mexico City, Mexico, Nov. 2-8. Dr. Guido Torres Martinez, Marsella No. 11, Mexico, D.F., Secretary-General.

INTERNATIONAL CONGRESS OF ELECTROENCEPHALOGRAPHY AND CLINICAL NEUROPHYSIOLOGY, Boston, Mass., U. S. A., Aug. 18-21, 1953. Dr. Robert S. Schwab, Massachusetts General Hospital, Boston 14, Mass., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF HAEMATOLOGY, Mar del Plata, Argentina, Sept. 21-26. Dr. Carlos Reussi, Anchorena 1710, Buenos Aires, Argentina, Secretary.

INTERNATIONAL CONGRESS FOR HISTORY OF SCIENCE, Jerusalem, Israel, August 3-7, 1953. Prof. F. S. Bodenheimer, Hebrew University, Jerusalem, Israel, President.

INTERNATIONAL CONGRESS ON HYDATID DISEASE, Santiago, Chile, Nov. 21-24. Organizing Committee, P. O. Box 9183, Santiago, Chile.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Friends House, London, N.W.1, Eng. Sept. 15-18. Sir Harold Boldero, 12 Pall Mall East, London, S.W.1, England, Secretary.

INTERNATIONAL CONGRESS ON MEDICAL LIBRARIANSHIP, London, England, July 20-25, 1953. Mr. W. R. LeFanu, % London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1, England, Chairman.

INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY, Montevideo, Uruguay, March 1-7, 1953. Dirreccion General del Servico de Sanitad Militar, 8 de Octubre y Mariano Moreno, Montevideo, Uruguay, Secretariat of the Congress.

INTERNATIONAL CONGRESS OF OTORHINOLARYNGOLOGY, Amsterdam, Netherlands, June 8-15, 1953. Dr. W. H. Struben, J. J. Viottastraat 1, Amsterdam, Netherlands, Secretary.

INTERNATIONAL CONGRESS OF RADIOLOGY, Copenhagen, Denmark, July 19-25, 1953. Professor Flemming Norgaard, 10 Oster Voldgade, Copenhagen K., Denmark, Secretary General.

INTERNATIONAL CONGRESS OF THERAPEUTICS, Madrid, Spain, Oct. 16-18. Professor Armijo, Instituto de Farmacologia, Cuidad Universitaria, Madrid, Spain, Secretary.

INTERNATIONAL CONGRESS OF UROLOGY, The Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 15-18. Dr. John A. Taylor, 2 East 54th St., New York, N. Y., U. S. A., Secretary-General.

INTERNATIONAL HOSPITAL CONGRESS, London, England, May 25-30, 1953. Capt. J. E. Stone, 10 Old Jewry, London, EC2, England, Hon. Secretary.

INTERNATIONAL STUDY CONFERENCE ON CHILD WELFARE, Bombay, India, Dec. 5-12. For information write: All India Save the Children Committee, 5 Carmichael Road, Bombay, India.

NEURORADIOLOGICAL SYMPOSIUM, Stockholm, Sweden, Sept. 17-20. Docent Ake Lindbom, Symposium Neuroradiologicum, Serafimerlasarettet, Stockholm K., Sweden, Secretary.

PAN AMERICAN CONGRESS OF THE MEDICAL PRESS, Buenos Aires, Argentine, July 12-16, 1953. Secretaria del Congress, 763 Uriburu, Buenos Aires, Argentine.

WORLD CONFERENCE ON MEDICAL EDUCATION, British Medical Association House, Tavistock Square, W.C.1, London, England, Aug. 24-29, 1953. Secretariat: World Medical Association, 2 East 103d St., New York 29, N. Y., U. S. A.

WORLD CONGRESS OF MEDICINE, Montecatini, Italy, Oct. 16-18. Secretariat: Corso Trieste, 65, Rome, Italy.

WORLD MEDICAL ASSOCIATION, Athens, Greece, Oct. 12-16. Dr. Louis H. Bauer, 2 East 103d St., New York 29, N. Y., Secretary General.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 23-25. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery.

ALASKA:* *Examination.* Juneau. On application in other towns where there are board members. *Reciprocity.* On application. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS:* *Regular. Examination.* Little Rock, Nov. 6-7. Sec., Dr. Joe Verser, Harrisburg. *Homeopathic.* Little Rock, Oct. 27-29. Sec., Dr. Carl S. Bungart, 105 N. 14th St., Fort Smith.

CALIFORNIA: *Written.* Sacramento, Oct. 20-23. Application must be received at least two weeks prior to date of examination. *Oral for Reciprocity Applicants.* San Francisco, Nov. 8. Applicants are requested not to arrange to come to an oral examination until they receive notice from the Credentials Committee. *Oral and Clinical for Foreign Medical School Graduates.* San Francisco, Nov. 9. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento.

COLORADO:* *Reciprocity.* Denver, Oct. 14. Exec. Sec., Mrs. B. H. Hudgens, 831 Republic Bldg., Denver.

FLORIDA:* *Examination.* Jacksonville, Nov. 23-25. Sec., Dr. Homer L. Pearson, 701 Dupont Bldg., Miami 32.

GEORGIA: *Reciprocity.* Atlanta, Oct. 14-15. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Ex. Sec., Dr. Austin W. Matthis, Agana.

IOWA:* *Examination.* Des Moines, Dec. 8-10. Acting Director, Dr. Walter L. Bierring, State Office Bldg., Des Moines.

KANSAS: Topeka, Dec. 10-11. Sec., Dr. O. W. Davidson, 864 New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, Dec. 8-10. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville.

MARYLAND: *Examination.* Baltimore, Dec. 9-12. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1.

MICHIGAN:* *Examination.* Lansing, Oct. 8-10. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA:* Minneapolis, Oct. 21-23. Sec., Dr. J. F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., Dr. R. N. Whitfield, State Board of Health, Jackson 113.

MISSOURI: *Examination.* Kansas City, Oct. 24-25. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 6-8. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

NEBRASKA:* *Examination.* Omaha, June 1953. Director, Mr. Husted K. Watson, Room 1009 State Capitol Bldg., Lincoln 9.

NEW JERSEY: *Examination.* Trenton, Oct. 21-24. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO:* Santa Fe, Oct. 13-14. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

NORTH CAROLINA: *Reciprocity.* Durham, Oct. 13. Sec., Dr. Joseph J. Combs, 419 Professional Bldg., Raleigh.

OHIO: *Examination.* Columbus, Dec. 1-3. *Reciprocity.* Columbus, Oct. 7. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON:* *Examination.* Portland, January. *Reciprocity.* Portland, Oct. 10-11. Exec. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland.

TENNESSEE:* *Examination.* Memphis, Oct. 1-2. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

TEXAS:* *Examination.* San Antonio, Nov. 13-15. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Ft. Worth.

VIRGINIA: *Examination.* Richmond, Dec. 11-13. *Reciprocity.* Richmond, Dec. 10. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke, Va.

WEST VIRGINIA: Charleston, Oct. 13-14. Sec., Dr. N. H. Dyer, State Office Bldg #3, Charleston 5.

WYOMING: Cheyenne, Oct. 6. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

VIRGIN ISLANDS: *Examination.* St. Thomas, Nov. 12-13. Sec., Dr. Earle M. Rice, St. Thomas.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: *Examination.* On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARKANSAS: *Examination.* Little Rock, Oct. 1-2. Sec., Mr. Louis E. Gebauer, 1002 Donaghey Bldg., Little Rock.

CONNECTICUT: New Haven, Oct. 11. Address: State Board of Healing Arts, 110 Whitney Ave., New Haven 10.

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 20-21. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington.

FLORIDA: *Examination.* Gainesville, Oct. 25. Sec., Mr. M. W. Emmel, Box 340, University of Florida, Gainesville.

MICHIGAN: *Examination.* Detroit and Ann Arbor, Oct. 10-11. Sec., Mrs. Anne Baker, 423 W. Michigan Ave., Lansing.

MINNESOTA: *Examination.* Minneapolis, Oct. 7-8. Sec., Mr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, Oct. 7-8. Director, Bureau of Examining Boards, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

OREGON: *Examination.* Portland, Sept. 6 and Dec. 6. Sec., Dr. Charles D. Byrne, State Board of Higher Education, University of Oregon, Eugene.

SOUTH DAKOTA: *Examination.* Vermillion, Dec. 5-6. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TEXAS: *Examination.* Austin and Galveston, Oct. 17-18. Sec., Brother Raphael Wilson, 407 Perry-Brooks Bldg., Austin.

WISCONSIN: *Examination.* Milwaukee, Dec. 6. Sec., Mr. W. H. Barber, 621 Ransom St., Ripon.

* Basic Science Certificate required.

DEATHS

Smith, Wilbur Cleveland, Pass Christian, Miss.; born Aug. 9, 1884; University Medical College of Kansas City, Mo., 1908; instructor in anatomy at the New York University and Bellevue Hospital Medical College in New York, from 1911 to 1913; head of the department of anatomy at Wake Forest (N. C.) College School of Medicine from 1913 to 1916; assistant professor of anatomy from 1916 to 1918, associate professor from 1918 to 1933, head of the department of gross anatomy from 1933 to 1944, and director of athletics for many years at Tulane University of Louisiana School of Medicine, New Orleans; served as dean and head of the department of anatomy at Louisiana State University School of Medicine in New Orleans; later became director of student health at the University of Wyoming in Laramie, Wyo.; served as director of intern education, Southern Pacific Hospital in San Francisco; member of the American Association of Anatomists; in 1938 awarded an honorary doctor of science degree from Wake Forest (N. C.) College; died July 3, aged 67, of diabetes mellitus.

Herly, Louis ⊕ New York; born Aug. 11, 1881; Columbia University College of Physicians and Surgeons, New York, 1903; for many years engaged in cancer research at the Institute for Cancer Research, Columbia University, and Memorial Hospital; in 1923 collaborated in cancer work at Radium Hemmet in Stockholm and Radium Institute, Copenhagen; made several study trips to European medical centers; since 1946 associate in cancer research at Columbia University; member of the International Cancer Congress, American Cancer Research Association, New York Pathological Society, and the New York Academy of Medicine; formerly associated with German Hospital, now Lenox Hill Hospital, and the Sydenham Hospital; served on the staffs of St. Marks, Lincoln, and Flower hospitals; author of many articles and monographs relating to cancer; died in New York Polyclinic Medical School and Hospital July 14, aged 70, of coronary thrombosis.

Becker, Joseph Norman, Park View, N. M.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1907; died in Santa Fe April 21, aged 69, of coronary thrombosis.

Brantley, James Worth, Grandin, Fla.; Tulane University of Louisiana School of Medicine, New Orleans, 1937; served during World War II; died May 20, aged 42, of acute coronary occlusion and rheumatoid arthritis.

Bruechert, Henry Nicholas ⊕ Parkersburg, Iowa; State University of Iowa College of Medicine, Iowa City, 1908; died May 4, aged 69, of cerebral thrombosis.

Byrne, John Ignatius ⊕ St. Joseph, Mo.; Central Medical College of St. Joseph, Mo., 1900; fellow of the American College of Surgeons; in 1912 president of the Buchanan County Medical Society; president of the board of health of St. Joseph; formerly member of the Missouri Board of Health; died June 20, aged 76, of pyonephrosis.

Caffrey, Anthony Joseph, Wilkes-Barre, Pa.; Medico-Chirurgical College of Philadelphia, 1910; served during World War I; on the staff of Mercy Hospital; died in Clarks Summit (Pa.) State Hospital June 24, aged 68, of valvular heart disease.

Caldwell, Otis Alexander, Akron, Ohio; Indiana University School of Medicine, Indianapolis, 1910; died in the Peoples Hospital June 9, aged 66.

Carefoot, George Howard, Fort Meade, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1914; died in Lakeland May 3, aged 66, of essential hypertension.

Charlton, Thomas Beatty, St. Petersburg, Fla.; Chicago Homeopathic Medical College, 1897; died May 20, aged 78, of carcinoma of the pancreas.

⊕ Indicates Member of the American Medical Association.

Clark, Frank H. ⊕ Clarinda, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; died May 23, aged 75, of uremia and heart failure.

Clark, Newton Thomas ⊕ Spartanburg, S. C.; Medical College of the State of South Carolina, Charleston, 1911; served during World War I; died April 13, aged 68.

Daniels, Derwin Dwoid ⊕ Akron, Ohio; Starling-Ohio Medical College, Columbus, 1914; member of the American Academy of General Practice; affiliated with St. Thomas Hospital, Children's Hospital, and the City Hospital, where he died May 5, aged 62, of acute coronary occlusion.

Godsey, Wash M. ⊕ Haleyville, Ala.; University of Tennessee College of Medicine, Memphis, 1929; died May 2, aged 53, of congestive heart failure and hypertension.

Harris, Allen Hickey ⊕ Denver; University of Wooster Medical Department, Cleveland, 1893; died April 13, aged 83, of coronary thrombosis.

Hawks, Joseph K. P. ⊕ Bloomington, Ill.; Northwestern University Medical School, Chicago, 1900; an Associate Fellow of the American Medical Association; once senior medical director of the State Farm Life Insurance Company; served as member of the board of trustees of the Illinois Wesleyan University in Bloomington; director of the People's Bank; served as chief of staff at Brokaw Hospital in Normal, where he died June 15, aged 78, of arteriosclerotic heart disease.

Holloway, Elza Elvis ⊕ Centralia, Ill.; University of Arkansas School of Medicine, Little Rock, 1913; died May 15, aged 79, of carcinoma of the prostate, bladder, and ribs.

Hoyme, Gjermund ⊕ Coronado, Calif.; Northwestern University Medical School, Chicago, 1918; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the State Medical Society of Wisconsin; formerly practiced in Eau Claire, Wis., where he was affiliated with Luther Hospital and Sacred Heart Hospital; affiliated with Coronado Hospital; died May 24, aged 62, of acute myocardial infarction.

Hughes, Robert Lee, Clearwater, Fla.; University of Nashville (Tenn.) Medical Department, 1905; died April 10, aged 78, of coronary occlusion.

Hutchinson, Lee Roy ⊕ Adel, Ga.; Atlanta Medical College, 1914; served overseas during World War I; for many years a member of the school board; affiliated with Adel Memorial Hospital, where he died June 1, aged 61, of cerebral thrombosis.

Lawler, Thomas Augustus ⊕ Taylorville, Ill.; Washington University School of Medicine, St. Louis, 1906; Associate Fellow of the American Medical Association; died in Jacksonville (Ill.) State Hospital June 17, aged 76, of chronic myocarditis and arteriosclerosis.

McClure, Ernest Covey ⊕ Bussey, Iowa; State University of Iowa College of Medicine, Iowa City, 1903; past president of the Marion County Medical Society; died May 31, aged 78.

McDonald, Carl Lenz ⊕ Cleveland; University of Wooster Medical Department, Cleveland, 1908; past president of the Academy of Medicine of Cleveland; member of the American Academy of Ophthalmology and Otolaryngology; served on the staff of City and St. Alexis hospitals; at one time chief-of-staff of St. John's Hospital, where he died May 24, aged 66, of acute coronary occlusion.

McKey, Earle Sinclair Jr. ⊕ Valdosta, Ga.; Emory University School of Medicine, 1936; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; served during World War II; died April 28, aged 43, of melanosarcoma of the right eye with metastases.

McKinnon, Hector Alonzo ✠ Birmingham, Ala.; Birmingham Medical College, 1910; died May 24, aged 83, of cerebral hemorrhage.

Mecklin, Hervey Haman, Louise, Miss.; University of Tennessee Medical Department, Nashville, 1909; died May 23, aged 67, of coronary thrombosis.

Mosier, Daniel Darlington, Brice, Ohio; Starling Medical College, Columbus, 1896; died in Springfield, June 16, aged 82, of cachexia.

Mowry, Classen ✠ Cranston, R. I.; College of Physicians and Surgeons, Boston, 1896; died June 17, aged 83.

Peebler, Ora Fay, Omaha; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1903; served on the staffs of Doctors and Creighton Memorial-St. Joseph's hospitals; died June 14, aged 71, as the result of an automobile accident.

Pitchford, William Noah ✠ Dormont, Pa.; University of Pittsburgh School of Medicine, 1933; on the faculty of his alma mater; served during World War II; on the staffs of the Pittsburgh Medical Center and Passavant Hospital; died June 21, aged 47, of coronary thrombosis.

Pritchard, John Lamb, Windsor, N. C.; College of Physicians and Surgeons, Baltimore, 1906; died May 2, aged 73, of cerebral hemorrhage.

Ragland, Wilhelmina Afton ✠ New York; College of Physicians and Surgeons of San Francisco, 1908; Woman's Medical College of Pennsylvania, Philadelphia, 1909; in 1951 received the Elizabeth Blackwell citation for "distinguished achievement in the practice and teaching of obstetrics" from the New York Infirmary; for many years associated with the New York Infirmary, where she was director of the department of obstetrics, and where she died June 26, aged 68.

Schaefer, Carl O. ✠ Racine, Wis.; Marquette University School of Medicine, Milwaukee, 1916; past president of the Racine County Medical Society; served during World War I; fellow of the American College of Surgeons; member of the American College of Chest Physicians and past president of the Wisconsin chapter; affiliated with St. Mary's Hospital; chest surgeon, Sunny Rest Sanatorium; on the surgical staff St. Luke's Hospital, where he died June 19, aged 60, of coronary thrombosis and hypertensive cardiac disease.

Shipp, George Wilfiam, Newton, N. C.; University of Maryland School of Medicine, Baltimore, 1910; died in Statesville May 18, aged 68, of uremia and nephritis.

Sigler, Laborn J., Clay, Ky.; University of Louisville (Ky.) Medical Department, 1893; died May 30, aged 93, of pneumonia.

Skidmore, William Edward ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1913; fellow of the American College of Surgeons; served in France during World War I; formerly affiliated with Long Island College Hospital, where he died June 19, aged 67, of carcinoma of the lung.

Sloan, Howard ✠ Chicago; Chicago Medical School, 1943; served during World War II; drowned June 15, aged 39, when his canoe capsized.

Smith, James Robert, Atlanta, Ga.; Southern Medical College, Atlanta, 1892; served during World War I; died in Decatur June 22, aged 80, of coronary occlusion and arteriosclerosis.

Snead, Willie Strother, Newport News, Va.; Medical College of Virginia, Richmond, 1911; died in Riverside Hospital April 3, aged 66, of chronic nephritis.

Snelling, John Garrison ✠ Monroe, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1924; specialist certified by the American Board of Surgery; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; served during World Wars I and II; attending surgeon, St. Francis Sanitarium; affiliated with Monroe Charity and E. A. Conway Memorial hospitals; surgeon for the Missouri Pacific Railroad; died June 21, aged 53, of coronary occlusion.

Tarrant, Jennie S., Cincinnati; Eclectic Medical Institute, Cincinnati, 1891; at one time on the staff of Woman's Hospital, now the Bethesda Hospital; died June 28, aged 90, of arteriosclerosis.

Thornton, William Joseph, Cleveland; University of Wooster Medical Department, Cleveland, 1910; for many years on the staff of the Glenville Hospital; died June 18, aged 78, of coronary occlusion.

Tuck, Raymond G. ✠ Royal Oak, Mich.; Detroit College of Medicine and Surgery, 1917; served during World War I; formerly medical director of the Oakland County Emergency Relief Administration; district health officer in Southern Oakland County; formerly affiliated with Oakland County Tuberculosis Sanatorium; editor of the *Bulletin of the Oakland County Medical Society* from 1934 to 1941; died in Pontiac (Mich.) General Hospital June 22, aged 60, of coronary thrombosis.

Twyman, Travis Barton, Locust Dale, Va.; Medical College of Virginia, Richmond, 1908; died May 14, aged 65, of cerebral vascular accident.

Uhler, Stewart Mann ✠ Allentown, Pa.; Jefferson Medical College of Philadelphia, 1906; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; affiliated with Sacred Heart and Allentown hospitals; a director of the First National Bank, Pen Argyl; died in Johns Hopkins Hospital, Baltimore, June 30, aged 73, of pulmonary embolism.

Watts, Frederick A. ✠ Owosso, Mich.; Detroit College of Medicine, 1899; for many years city physician; died June 7, aged 82.

Weil, Elisabeth Mathilde ✠ Pearl River, N. Y.; Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main, Prussia, Germany, 1924; associated with Vanderbilt Clinic and Columbia-Presbyterian Medical Center in New York; died in the Bronx Hospital, New York, July 8, aged 52, of uremia.

Weinberg, Jacob, Brooklyn; University and Bellevue Hospital Medical College, New York, 1920; died June 2, aged 54, of coronary heart disease.

Wendelken, Charles Wesley ✠ Portsmouth, Ohio; Western Reserve University Medical Department, Cleveland, 1908; recently resigned as city health commissioner; past president of the Hempstead Academy of Medicine; affiliated with Mercy Hospital, where he died July 5, aged 69, of coronary occlusion.

West, Robert Charnock ✠ Dumas, Texas; Baylor University College of Medicine, Dallas, 1935; served overseas during World War II; on the staff of the Memorial Hospital; died in Hillcrest Memorial Hospital, Waco, June 27, aged 44, of adenocarcinoma of the ileum.

Westerman, Daniel Benett, Cooper, Texas; Barnes Medical College, St. Louis, 1905; died in Paris July 6, aged 82.

White, Claude Huron ✠ Mooresville, Ind.; Medical College of Indiana, Indianapolis, 1901; formerly county coroner; for many years county health officer; served during World War I; past president of the Citizens Bank of Mooresville; died July 11, aged 77, of coronary heart disease.

White, Julius Shangowah, Baltimore; Meharry Medical College, Nashville, Tenn., 1943; died May 14, aged 48, of acute bronchopneumonia.

White, Paul Geltmacher, Claremont, Calif.; the Hahnemann Medical College and Hospital, Chicago, 1903; died May 2, aged 80.

Wilson, James Sharp ✠ Canton, Ohio; University of Pennsylvania School of Medicine, Philadelphia, 1918; past president of the Stark County Medical Society; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; on the staff of the Aultman Hospital; died June 29, aged 58, of carcinoma of the esophagus.

Winters, William P., Mount Pleasant, Utah; College of Physicians and Surgeons, Baltimore, 1893; formerly mayor; died in Price July 13, aged 83.

Wise, William Dennison, Orrville, Ohio; University of Wooster Medical Department, Cleveland, 1897; served during World War I; died in the Cleveland Clinic June 13, aged 81, of cerebral hemorrhage.

FOREIGN LETTERS

CHILE

Pulmonary Silicosis.—Recently, Dr. J. Ansola and his colleagues reviewed 717 cases of pulmonary silicosis. At present, there are 80,000 persons engaged in mining in Chile: 15,000 in copper mines, 20,000 in coal mines, and 30,000 in saltpeter mines. Chile also has quartz, glass, ceramic, and cement industries. In 1941 Lorca and his colleagues proposed to the Chilean Society of Tuberculosis a new classification of silicosis. Lorca based his classification on the distribution of nodular elements on the lung fields rather than on the diameter of the nodular element. He divided his cases into the following groups. 1. Habitual fibrosis or normal thorax. 2. Initial pathological fibrosis, in which there is an accentuation of the bronchovascular pattern and of the hila. In this phase the characteristic nodular element is still not to be found. 3. (first phase) Initial nodular fibrosis, in which the nodular lesion is seen. 4. (second phase) Marked nodular fibrosis, in which a uniform and symmetrical distribution of the nodular elements practically covers both lung fields. 5. (third phase) Confluent nodular fibrosis, in which there is a tendency to fuse elements. The authors reserve the term "silicotuberculosis" for cases in which there is silicosis and an active tuberculous lesion. If the tuberculous lesion is inactive they speak of silicosis associated with tuberculosis. Of the 717 patients studied 520 were from copper mines, 80 from the quartz and glass industries, 31 from the marble and sand industries, 27 from the cement industry, 11 from the ceramic and porcelain industries, and 9 from the coal mines. The following were the types of silicotic lesions found: first phase of initial nodular fibrosis, 231 cases; second phase of marked nodular fibrosis, 217 cases; third phase of confluent nodular cases, 73 cases; transitory phases, 108 cases; and silicotuberculosis, 88 cases.

The age distribution was as follows: less than 21 years, 0.6%; 21-30 years, 8.3%; 31-40 years, 37%; 41-50 years, 34.1%; 51-60 years, 14.5%; and over 60 years, 4.7%. Thus, 85% of the patients were between 31 and 60 years. The racial uniformity of the workers did not allow a study of the influence of race on the incidence of silicosis. A history of pulmonary tuberculosis was found in 2.2% of the workers, which is within the normal range for tuberculosis in Chile. Regarding syphilis, in 13.1% of patients with silicosis there was a history of a genital lesion or of positive serologic tests; this percentage increased to 31.8% in the cases of silicotuberculosis. The serologic tests were positive in 8% of the 717 cases studied. This must be compared with 1.6% of the positive serologic tests found during four years among 23,934 persons observed by the Instituti de Medicina del Trabajo. There is no doubt that today syphilis aggravates occupational lung disease and facilitates its tuberculization. The authors found that the length of exposure to the silicotic environment was: less than one year, 2%; 1-5 years, 9.5%; 6-10 years, 24.5%; 11-15 years, 24.4%; 16-20 years, 18%; 21-25 years, 12.5%; and more than 25 years, 8.7%. It is interesting to note the difference between the length of exposure of workers in the quartz and glass industries and those in mining jobs. Whereas in the mining jobs 26.3% were exposed for less than 10 years and 4.7% for less than 5 years before developing silicosis of the lungs, in the quartz and glass workers 80% needed less than 10 years and 58% less than 5 years to develop silicosis.

There is no doubt that silicosis can evolve without any specific signs or symptoms of the third phase; however, a careful study of the patients revealed: cough, in 83.1%; dorsalgias, 76%; dyspnea, 35%; asthenia, 26%; hemoptoic sputum, 23.5%; loss of weight, 20%; gastric unease, 15%; anorexia, 7.5%; and insomnia, 4%. Objective signs are frequent and are due to two main complications of pulmonary silicosis: pulmonary emphysema and chronic bronchitis. The main physical findings were: signs of emphysema in 25.5%, bronchial noises in 18.4%, and decrease of thoracic expansion and an increase of vocal vibrations in 12.2%.

Anemia was found in cases with both silicosis and tuberculosis. In 40% of cases with only silicosis there was a certain degree of polycythemia, but in only 2.3% was the red blood cell count over 6 million. The degree of polycythemia was decreased when the silicosis was complicated by tuberculosis. The authors did not observe leukopenia, which is so often described in advanced cases of silicosis. Leukocytosis was found in 33.2% of cases of silicosis and in 70% of cases of silicotuberculosis. The Velez index for differential diagnosis between complicated and uncomplicated cases of silicosis was positive in 30% of uncomplicated silicosis and in 83% of silicotuberculosis. A left deviation of the differential white blood cell count was found in 14.5% of silicosis and 46% of silicotuberculosis. Lymphocytes tend to decrease when a tuberculous infection starts. The sedimentation rate was found within normal range in silicosis but increased in 91% of silicotuberculosis. Determinations of silicemias and silica in the sputum were of doubtful value. Of fundamental importance for the differential diagnosis between silicosis and silicotuberculosis is the search for Koch's bacillus. This was done by a great number of direct bacilloscopies, concentration of sputum, examination of gastric content, and culture and animal inoculation. In 58% of the cases of silicotuberculosis the authors were able to obtain Koch's bacillus.

Silicosis is a chronic disease, and in many cases it continues its evolution even when the contact with the silicotic surroundings has ceased. The authors give the name "silicosis of rapid evolution" to those cases that were exposed to a high concentration of very fine silicotic dust and that developed pulmonary fibrosis in a short time, sometimes in less than a year. The authors had 14 cases of this type from the quartz and glass industries. Among the 82 patients that remained at their tasks, 76.8% did not show modification of their lesions in eight years of observation, 14.6% had a course toward a pure form of silicosis, and 8.5% had silicotuberculosis. The authors emphatically affirm that silicosis continues its progress even when the patient has been withdrawn from exposure at work. Thus, of 89 cases, who discontinued work, 80% did not show progress of their lesions, 11.2% evolved a pure silicotic form, and 7.8%, silicotuberculosis. The most frequent complications of silicosis were: emphysema 25.4%, chronic bronchitis 18.4%, and pulmonary tuberculosis 12.2%. Acute pneumopathies, lung abscesses, and pulmonary neoformations were just as frequent as in the general nonsilicotic population. Functional respiratory tests (vital capacity and thoracic expansion) were altered in 19.5% in the first phase, 32.2% in the second phase, 55.7% in the third phase of pure silicosis, and in 66.2% of silicotuberculosis.

Regarding the medicolegal aspect, the Chilean national classification deals with the workers' incapacities and the corresponding indemnities. During the first phase workers can be submitted to occasional check-ups, but if the course of the disease is rapid it is better to separate the person from his surroundings, and in this case there should be indemnification. The indemnification of patients in the second and third phases and in silicotuberculosis is no problem because they are protected by the Law of Accidents of Work.

Program Honoring Ramon y Cajal.—Various medical institutions of Santiago took part in the celebration of the first centenary of the birth of the famous Spanish histologist, Ramon y Cajal. A committee was formed by the presidents of the societies of neurology, psychiatry, neurosurgery, normal and pathological anatomy, and otoneuroophthalmology, and the president of Circulo de Profesionales Hispanicos. The program consisted of special sessions in these medical societies during the week, May 2 to 8. It opened with a speech by Prof. A. Garreton, dean of the Medical School of the University of Chile, followed by Prof. H. Lea-Plaza and Dr. C. Espildora. The fellowship was awarded to Dr. C. Oberti, who will go to Madrid to continue his work in histology in the Institute Santiago Ramon y Cajal.

The items in these letters are contributed by regular correspondents in the various foreign countries.

MEXICO

Eradication of Smallpox.—Since the year 1520, when the first smallpox epidemic occurred, this disease has been endemic in Mexico, and every year it has caused a high number of deaths. To deal with this problem, the federal health authorities organized a permanent antismallpox campaign, which had, as its main purpose, compulsory universal vaccination. As a result the mortality indexes decreased; in 1930 there were 17,000 deaths due to smallpox; by 1935, 5,000; and in 1945, only 1,000. Finally, last June, came the announcement that in the previous 14 months not a single death from smallpox had been registered and that the immunity of the general population was considered higher than 65%. With this announcement came a letter of congratulation from President Alemán to those who had participated in the campaign, which will continue indefinitely. Tribute was also paid to three technicians who died in the fulfillment of their duties in the fight against smallpox.

At the same time it was made known that the fight against typhus has been very successful, since the morbidity of this disease is very low now and the mortality insignificant. In fact, it is expected that it will also be eradicated in a short term. Main factors in these results have been the spreading and almost systematic control of insects by DDT and utilization of antibiotics with antirickettsial properties. These are the latest achievements of the federal health authorities, which proudly declared that the average life expectancy has increased 20 years during the last quarter of the century.

Poliomyelitis.—Several peculiarities have been observed in the 1952 outbreak of poliomyelitis in Mexico, most of them favorable. More cases have occurred in the northern part of the country, a fact which would suggest the possibility of a certain relationship with the Texas epidemic. In Central Mexico, poliomyelitis not only has been less frequent but clinically less severe and the neurological sequelae milder. In spite of these circumstances, the federal health department will complete, during the course of the year, two centers for the care and rehabilitation of invalids.

NORWAY

Development of Pathological Anatomy and Bacteriology.—The 10th Scandinavian Pathological Congress was held in Bergen in June and was presided over by Professor Vogelsang, head of the serobacteriological department of Gade's Institute. In his opening address he traced the careers of the Norwegians who have done most to promote medical research in Norway. He gave praise to Armauer Hansen, whose discovery of the bacillus of leprosy was the result of many years' indefatigable work. His contemporaries were convinced that Hansen's disease (leprosy) was a hereditary disease, and Hansen was daring when he suggested that such a chronic disease as leprosy could be of microbial origin. He discovered the bacillus of leprosy in 1873 and that of the bacillus of tuberculosis in 1882. It may not be generally known that Hansen's enthusiasm as an experimental investigator led, at least on one occasion, into serious trouble. He had tried unsuccessfully to inoculate the eye of a woman leper with a leprous nodule taken from another leper. Though the patient suffered no harm, a complaint was lodged against him, and by a legal judgment of May 31, 1880, Hansen was dismissed as medical officer of a leper hospital. He had, however, also been appointed senior medical officer for Norway in 1875, and he remained in this position until he died in 1912.

Turning to more recent times, Professor Vogelsang emphasized the work of two other Norwegians. The first was Magnus Haaland, who was put in charge of Gade's Institute when it was founded in 1912. Among his many enterprises was a long-term campaign for the charting of the typhoid diseases on the west coast of Norway and a search for chronic carriers, an activity that still continues. The other man, still alive, is Professor Thjötta, who, in Professor Vogelsang's opinion, is today the central figure in Norwegian bacteriology and the founder of a school from which many pupils have gone out to hold important laboratory appointments.

In a discussion of present day conditions in the field of research, Professor Vogelsang reported that governing bodies have learned since the war something of the importance of medical research and its financial needs. He was encouraged by the fact that many young and able Norwegian physicians are now applying for research scholarships. On the other hand, most laboratories are overcrowded and forced to use passages, corridors, and cellars. For example, when Gade's Institute was opened in 1912, its staff numbered 4; now some 50 persons work there.

Results of Leukotomy.—At the Valen Mental Hospital on the west coast of Norway, 143 patients underwent prefrontal leukotomy between April, 1949, and December, 1951. An analysis of these cases, reported Feb. 1, 1952, by Dr. S. Rimestad, shows that, while final conclusions cannot yet be drawn concerning the merits of this operation, the results obtained are already instructive. To facilitate a comparison of the observations of different hospitals he recommends the adoption of a uniform system of recording, with space reserved on a standardized record sheet for each of the points requiring special notice. It is already evident that the conditions most frequently chosen for this operation are schizophrenia and schizophrenic-like diseases, for as many as 121 of the 143 cases belonged to this category. With only two exceptions, all the patients had previously been given shock treatment with negative or only transient results. Shock treatment was also given to several patients after the operation. Three of the five deaths were a direct result of the operation. No connection could be established between the immediate and the late results of the operation, and there were several patients whose immediate reaction to the operation was disappointing, but whose ultimate reaction was encouraging. On the other hand, the good results were, on the whole, directly proportional to the brevity of the duration of mental disease before the operation. Nearly two-fifths of the patients could be discharged from the hospital, and among them were five men who had been inmates for more than 10 years. About three-fourths of the patients who remained in the hospital could be regarded as improved. The operation evidently rendered the patients more amenable to educational therapy, which called for great patience and tenacity on the part of the hospital staff. The patients were put to work as soon as possible, and the special attention paid them helped to encourage them and to achieve the desired results.

Scandinavian Medical Congress.—The 23rd Scandinavian Medical Congress was held in Oslo in June and was presided over by Prof. H. A. Salvesen, with Prof. Olav Hanssen, Professor Holmgren, and Professor Saltzman acting as honorary presidents. In his opening address, Professor Salvesen recalled that the popular conception of the body renewing itself every seven years has given place to the belief that the brain undergoes complete renewal in a few weeks. Professor Salvesen said that medicine is becoming a more exact science owing to the invocation of chemistry, physics, bacteriology, radiology, and mathematics as aids to diagnosis. This process may have simplified matters for the physicians but it does not do so for the patient who has to run the gauntlet of numerous tests, many of which give negative answers.

At the congress an account was given of tests of a Norwegian preparation of corticotropin (ACTH) at a hospital in Drammen, where Dr. Olav Römcke and Dr. J. H. Solem have tried to reduce the doses of corticotropin given to the minimum. Among their 27 patients, treated over a considerable period, were 18 suffering from chronic articular rheumatism. By giving 20 I.U. twice weekly they succeeded in obtaining satisfactory results in 23 of the 27 cases, though without complete freedom from symptoms. Because of this cautious approach to dosage, they avoided troublesome side-effects and kept the cost of this therapy within reasonable bounds, i. e., at the rate of about $200 per patient per year. They pointed out how difficult it is to compare the doses employed by different observers, for the degree of freedom from symptoms to be aimed at is largely a matter of personal opinion.

PARIS

Society for Renal Pathology.—The Society for Renal Pathology heard a statement by P. P. Lambert, F. R. Grégoire, and associates (Brussels), on the action of corticotropin on glomerular permeability. They reported that in certain patients with nephrosis corticotropin reduces abluminuria. In an experimental study on dogs, the authors found that the ability of the animals' kidneys to filter hemoglobin is 5% as great as the ability to filter water and that this ratio is diversely influenced by corticotropin: increasing in 5 cases, decreasing in 2, and remaining within the limits of normal variation in 11. They observed that the effect of corticotropin on the excretion of hemoglobin follows the same pattern in dogs as in nephrotic patients; excretion increases after a short course of corticotropin treatment and decreases after a long one. The study of this question is intricate, as it would appear that corticotropin is influencing several factors involved in the passing of protein through the glomerular membrane. In 1946, M. C. Gouygou (Paris) described the presence, in the tuberculous kidney, of calcified foliated bodies he called "phyllolithes." He also presented, at the same meeting, a new study, in which he stressed the indisputable association of these with tuberculosis. Physiopathologically, there is necrosis and then mummification of the giant cells, followed by calcareous deposition in concentric layers. Phyllolithes are found at the level of sclerous foci, owing to a local deviation of calcium metabolism.

A report was presented by M. Levy and M. Sapire (Rothschild Hospital) on disturbances of electrolytic balance in anuria and the importance of its early correction. The authors stressed the physiopathological complexity of anuria, which involves several metabolic disorders. They stressed the importance of the electrolytic imbalance, which is only one link in this process. Sodium chloride is the most important of blood electrolytes on account of its presence in large quantities and its physiological role. The authors believe that anuria can be cured by the injection of sodium salts; they prove it by several case histories, where a diuresis of from four to seven liters was obtained by slow infusion of sodium chloride in a 4% concentration. The authors reported cases of recovery from postoperative anuria thus obtained, especially in aged persons, and from spirochetal jaundice. They also draw attention to the existence of two stages of anuria: first a reversible functional inhibition; followed, after a variable period, by a second nonreversible stage. They stress the necessity of early replacement of chlorides to save the patient and the effectiveness and value of this procedure, which is far less expensive than the exchange transfusion generally performed.

Sodium Citrate in Vascular Disease.—In 1945, Courbin, "physician of the hospitals" at Bordeaux, administered intravenous injections of 1 gm. of sodium citrate in a 20% solution to a 48-year-old hypertensive patient with vascular cerebral spasm with right hemiplegia, aphasia, and coma. He noted a fairly rapid regression of these phenomena following the administration of 12 injections within 48 hours. Since 1946, A. Camelin and associates (Lyons) used this method on 214 subjects, of whom 50 were outpatients, and presented a detailed report to the Medical Society of the Lyons Hospitals. They stressed that in a total of 10,000 such cases they observed no accident, but that, nevertheless, they keep within Norwet rules and never administer doses of more than 0.15 gm. per kilogram of body weight. In order to prevent accidents owing to citrate anions, they perform a slow injection with a 10% concentration. There was no effect of the citrate on the bleeding time and only a negligible influence on the coagulation time. As a precaution, they never applied this treatment when either of the two was prolonged. This treatment is especially indicated for plethoric hypertensive patients with hypercholesterolemia, azotemia, frequent precordial pain, visual disorders, and vertigo. All these symptoms subside within a week with sodium nitrate, the maximum blood pressure and the level of azotemia fall by a few centimeters. Recent retinal changes improve. Ten seconds after the injection the patient experiences a peculiar feeling of freshness or a salty taste. Hypertensive diabetic patients are also relieved. Cerebral vascular spasms are rapidly influenced with one injection every third hour, according to Courbin's method. Arteritis and diabetic arteritis are also amenable to this therapy. Nothing certain is known in regard to the mode of action of sodium citrate, and only hypotheses are possible; there may be inactivation of the calcium ion by the sodium ion or a reduction of the viscosity of the circulating blood, the cause of many visceral disorders. The authors are also keeping in mind another possible explanation, the importance of the sodium ion in the cellular and blood electrolytic balance. A modification of the plasma tonicity, brought about by citrate sodium, may also occur. The experiments made by Professors Leon Binet, J. Vernes, and others show that citrate may be effective against arterial atheroma provoked by vitamin D_2.

Spasmophilic Diathesis and Gastrointestinal Parasitosis.—The prevalence of parasitic infestation, especially among school children, has given rise to numerous works on its pathogenesis and the part played in its appearance by predisposing environment. Prof. M. Villaret stressed the importance of the deficiency of digestive secretions, while C. Launay and J. Cottet believe a deficiency in the production of biliary salts may be responsible. Prof. E. Boltanski, after years of clinical study draws attention to the etiological role of spasmophilic diathesis. He notes that intestinal parasitosis is also frequent in conditions resembling spasmophilia-acrocyanosis. In the statement, he presented to the National Academy of Medicine on March 4, 1952, the author, mentioning the relation between hypocalcemia and alkalosis, stressed that in a large number of cases the occurrence of intestinal parasites or of their eggs depends on the modification of the fecal hydrogen ion concentration. Thus, spasmophilic diathesis combines with local predisposition. According to Prof. Justin Besançon and Dr. H. P. Klotz, spasmophilia, the assumed basis of parasitosis, is a psychosomatic condition. According to Professor Richet, it is provoked by a diencephalo-hypophysial disorder causing hyperfolliculinism and, perhaps, hypoparathyroidism. Boltanski proposes to initiate a more extensive study of this important question by means of statistics compiled from the legal "Personal Medical Record Booklet."

Centropneine from Pancreatic Extract.—In 1925, L. Garrelon, D. Santenoise, and A. Legrand observed that in certain animals the ablation of the pancreas was followed by a slowing of the respiratory rhythm. D. Santenoise has prepared a pancreatic extract, to which he gave the name of vagotonin, because of its powerful action on the vagal tone; but, in the course of further experiments on animals, this extract was noted to exert a powerful action on parasympathetic reflex excitability and also on the reflex and biochemical excitability of respiratory centers. By fractionating pancreatic extracts with concentrated sodium chloride solutions Prof. M. Polonovski and Dr. D. Santenoise have recently been able to separate the vagotonic hormone having no action on respiration, from the central respiratory one, having no action on the vagal tone. The former retained the designation vagotonin, and the latter was called centropneine. Clinical experiments in asthma and other respiratory disorders has shown its effectiveness as a regulator of respiration.

Sexual After-Effect of Gastrectomy.—In a study on 130 subjects who had undergone a gastrectomy for ulcers followed up for at least two years after the operation, P. Hillemand and L. Maffei observed either a significant decrease or total absence of sexual activities in 35 male and 3 female patients. This is not impotency but rather a lack of libido or an indifference. These subjects were all sexually active prior to the operation. This occurred in 6 persons out of 7 from 21 to 30 years old, in 3 out of 7 from 31 to 40 years old, and in 16 out of 54 from 41 to 50 years old. At first, the authors believed these were postoperative disorders, but this was disproved by careful examinations. They are now pursuing a similar study on patients subjected to cholecystectomy.

Protonic Microscope.—Since the discovery by Louis de Broglie of the electronic microscope with electronic lens and a magnifying power of 60,000 diameters, which allowed the detection of the filtrable virus of poliomyelitis, C. Magnan, assistant chief to the "Collège de France" Laboratory, and P. Chanson have been studying, in the laboratory for atomic and molecular physics, the replacement of the electron cannon by a proton one, using nuclei of hydrogen atoms having a mass 1,840 times that of the electron. After numerous and very complicated trials, the new microscope was brought to a practical point, and the principle of this instrument, which will have a magnifying power of 600,000 diameters, was presented to the Academy of Sciences.

CORRESPONDENCE

ARMY MEDICINE IN EUROPE

To the Editor:—Having spent the month of June (1952) making a consultant and teaching tour of the U. S. Army hospitals in Germany and Austria, it occurred to me that many of our profession would be interested in up-to-date observations of Army medicine in these countries. In contrast with my experiences in a similar tour in 1948, when practically all hospitals, with the exception of the two general hospitals, had as chiefs of medical service physicians who had just completed their internship, now, almost without exception, each physician on each medical service has had residency training. The incidence of physicians who have had only internship training will increase as the full effect of the policy of calling up physicians on completion of their internship is manifest. It is assumed that a sufficient number will be deferred for residency training to maintain a proper ratio of intern-trained and residency-trained physicians in the armed forces.

In 1948, there were only three internists in the theater who were diplomates of the American Board of Internal Medicine. Now there are several times this number. Though the standard of medicine observed in 1948 was excellent, the increased training and greater clinical maturity now prevailing is outstanding. It exemplifies the results of the training program adopted by the Army following World War II. With this improved caliber of internists, the number of civilian consultants has been wisely reduced by at least two-thirds. The quota of civilian consultants as at present employed seems ideal, but a lengthening of the tour by about 10 days would be advantageous.

There are 17 hospitals, including the Air Force hospital at Wiesbaden but excluding small hospital units in France and in Trieste. This was in contrast to 13 hospitals in 1948. There are three general hospitals functioning and a fourth to be opened shortly at Landstuhl, as compared with two general hospitals in 1948. The policy of calling on the theater consultants and specialists in the larger hospitals in problem cases throughout the theater is a growing one and is reassurance that the soldier is getting the best available treatment. Great strides have been made in the reduction of the nonprofessional duties that medical officers are called on to perform. This has reached nearly, but not quite, the ideal, in my opinion.

The change in the civil state of Germany has been little short of phenomenal. Germany is a nation at work. From sunrise, about 4:30 a. m., to sunset, about 9 p. m., the workers are in the fields. Also, the rebuilding is proceeding at such a rapid rate it gives one the impression of a highly competitive race for survival. Unemployment was not complained of, and the supply of food is unrestricted. Germany has, since World War II, been turning out physicians in excess of the country's needs. As a result, more and more German physicians desire to establish residence and practice in the U. S. A. Some have had fair training, but for many the training was mediocre. One gets the impression, however, that German medicine is recovering rapidly. Their therapy, so weak in 1948, is becoming quite up-to-date. For example, four years ago the supply of penicillin was so scarce that they were extracting this product from the urine of U. S. army hospital patients who were receiving penicillin. I understand that approximately 30% of the penicillin was recovered in this manner. Now Germany is making her own penicillin. In contrast to this, the Russian sector of Berlin still gives one a "1948 impression."

Hepatitis is the chief medical problem, with neuropsychiatric disorders and peptic ulcers present in greater frequency than in army hospitals in the U. S. The practice of sterilizing all puncture instruments by autoclaving has been recommended as at least one method in reducing the incidence of viral hepatitis. There is a hepatitis center at the 98th General Hospital in Munich. It is well equipped with a top-notch research team and superior facilities for the study of this disease.

Finally, one could not fail to be very favorably impressed with the teamwork, the superior caliber of medical practice, and the superb physical facilities that are available for the care of the sick throughout this theater.

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REVISION OF ANATOMIC NOMENCLATURE

To the Editor:—Pursuant to a resolution of the International Congress of Anatomy at Oxford, 1950, a conference was held at London, May 26-30, 1952, under the auspices of UNESCO (Council for the Coordination of International Congress of Medical Societies) to explore the possibility of an international revision of the nomenclature of human anatomy. Eight delegates participated, representing the principal national and linguistic groups of Europe, the British Commonwealth, and America. Russian anatomists were invited to send a delegate but did not respond. The committee is in touch by correspondence with the Anatomical Society of Japan.

It was unanimously agreed to bring the Basel Anatomical Nomenclature up-to-date by a conservative revision, making changes only where necessary for scientific correctness. Subcommittees will be appointed at once to prepare the new lists of terms for each system of organs. It is hoped that tentative lists will be ready by December, 1953, for editing and submission to the next international congress, to be held in France in August, 1955.

The secretary of the revision committee is Prof. T. B. Johnston, Guy's Hospital Medical School, London, S. E. 1. Interested persons in the U. S. and Canada may obtain further information from Dr. George W. Corner, at the address given below.

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CONTROL OF POSTPARTUM HEMORRHAGE

To the Editor:—In THE JOURNAL of Aug. 9, 1952, page 1413, Dr. Louis H. Douglass has pointed out that I misquoted him in my article titled "Control of Postpartum Hemorrhage" (*J. A. M. A.*, June 21, 1952, page 757). I regret this misquotation very much, especially because I am of the same opinion as Dr. Douglass concerning the use of conventional uterine packings for postpartum hemorrhage. However, his excellent results cannot be duplicated elsewhere, unless facilities and experience are on a par with those that prevail in his hospitals. The prevention of postpartum hemorrhage is not under discussion here; but once such hemorrhage is present it has to be dealt with promptly and adequately. In many hospitals, the specialist, be he surgeon or obstretrician, may not be at hand nor available at a moment's notice. Diagnosis and operative procedure may be delayed. In these cases "traction packing," entirely different from the conventional packing, can perform a lifesaving service in stopping the bleeding and obviating any haste thereafter.

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New York 21

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Internal Medicine, Chicago

89:689-858 (May) 1952

Some Effects of Cortisone on Metabolic Disturbance Associated with Renal Edema: Study of Three Patients. N. M. Keith, M. H. Power, G. W. Daugherty and H. M. Keith.—p. 689.
*Chemical Blockade of Sympathetic Nervous System in Essential Hypertension: Experience with Oral Therapy with 688-A (N-Phenoxyisopropyl-N-Benzyl-β-Chloroethylamine Hydrochloride). M. Moser, M. Walters, A. M. Master and others.—p. 708.
Histopathology of Muscle in Rheumatoid Arthritis and Other Diseases. E. F. Traut and K. M. Campione.—p. 724.
Treatment of Pneumococcal Meningitis with Large Doses of Penicillin: Series of 20 Consecutive Cases. P. A. Bunn and G. Peabody.—p. 736.
Condition of Heart Following Beriberi and Malnutrition. R. L. Griffith. —p. 743.
*Toxoplasmosis in the Human Adult. E. H. Kass, S. B. Andrus, R. D. Adams and others.—p. 759.
Primary Hyperparathyroidism. R. Murphy, L. M. Hurxthal and G. O. Bell.—p. 783.
Cryptococcic Meningitis of Nearly 16 Years' Duration. P. B. Beeson. —p. 797.
Rational and Clinical Use of Steroid Hormones in Cancer. S. I. Griboff. —p. 812.

Chemical Blockade of Sympathetic Nervous System in Hypertension.—Dibenamine® (N, N-dibenzyl-β-chloroethylamine) hydrochloride and its derivatives block the action of circulating epinephrine ("adrenolytic" action) and inhibit the response of cells and tissues to sympathetic nervous system stimulation ("sympatholytic" action), i. e., they produce a specific "adrenergic blockade." A new dibenamine® derivative, 688-A (N-phenoxyisopropyl-N-benzyl-β-chloroethylamine hydrochloride), is more potent and less toxic than dibenamine.® It was used in the treatment of 11 patients with essential hypertension. Blockade was irregular when enteric-coated tablets were used but was continuous when gelatin capsules were substituted. Dosage varied from 1 to 4 mg. per kilogram of body weight per day and was less with the latter preparation. A significant fall in recumbent diastolic pressure was obtained in 5 of the 11 patients. Significant lowering of diastolic blood pressure in the upright position occurred in 9 of the 11 patients. Recumbent and postural effects on the blood pressure and the cold-pressor response in hypertensive patients seem to compare favorably with results obtained in patients subjected to surgical sympathectomy. Severe toxic reactions did not occur, but side-effects such as weakness, drowsiness, nasal stuffiness and palpitations proved annoying in several patients. These effects do not appear to present a contraindication to the use of 688-A.

Toxoplasmosis in Human Adult.—Toxoplasmosis is recognized frequently in children as a congenital illness, but rarely as an acquired disease in adults. This paper presents the case of an elderly woman in whom the source of the infection could not be determined. The illness took the form of a "spotted fever." The diagnosis was made from the histological appearance and animal pathogenicity of organisms seen in a muscle biopsy specimen. The patient was treated, at various times, with full courses of aureomycin, penicillin, streptomycin, sulfadiazine, corticotropin, and chloroquine. At autopsy many of the lesions were apparently healing, suggesting that the drugs may have modified the disease. Serial antibody studies indicated that the infection was acquired. Necropsy showed widespread polymyositis, severe damage to the central nervous system in the form of meningoencephalomyelitis, and myocarditis. Toxoplasma organisms were isolated from heart, lung, liver, kidney, spleen, cerebrum, medulla, blood, and cerebrospinal fluid at autopsy, but unequivocal histological lesions were demonstrated only in the brain, myocardium, and striated muscle. The clinical syndrome in adult toxoplasmosis consists of fever, maculopapular rash, and headache. There may be cough, arthralgia and myalgia, lymphadenopathy, pneumonitis, and conjunctivitis, but cerebral calcifications and chorioretinitis are absent. Leukopenia or normal leukocyte counts occur. The distribution of the myositis, the myocarditis, the lesions in the central nervous system, and the petechial skin eruptions all are indicative of a hematogenous spread of the infecting agent. Antibodies may not appear until late in the course of the disease. A few persons with diagnosed toxoplasmosis have recovered, and some of these have had a very mild infection. The relatively high incidence of antibodies suggests that toxoplasmosis is a common disease that usually assumes the form of a mild infection with few symptoms. A florid example of the disease such as the one reported here is rarely encountered in adults.

A.M.A. Arch. Ophthalmology, Chicago

47:551-694 (May) 1952

*Results of Use of Corticotropin (ACTH) in Treatment of Retrolental Fibroplasia. A. B. Reese, F. C. Blodi, J. C. Locke and others.—p. 551.
*Treatment of Retrolental Fibroplasia with Vitamin E, Corticotropin (ACTH), and Cortisone. W. O. La Motte Jr., G. S. Tyner and H. G. Scheie.—p. 556.
Nutritional Amblyopia: Statistical Report of Course and Progress in 238 Cases. F. C. Rodger.—p. 570.
Experimental Radiation Cataract: II. Cataract in Rabbit Following Single Exposure to Fast Neutrons. D. G. Cogan, J. L. Goff and E. Graves. —p. 584.
Subclinical Retinal Detachments. C. L. Schepens.—p. 593.
Third-Nerve Palsy with Sparing of Pupil in Diabetes Mellitus: Subsequent Identical Lesion of Opposite Eye. V. O. Eareckson and J. M. Miller. —p. 607.
Surgical Treatment of Congenital Glaucoma. E. N. Robertson Jr.—p. 611.
Acorn Implant. H. Levitt.—p. 616.
Paired-Scissors Design Based on Geometrical Anatomy of Ideal Corneal Section. R. D. Mattis.—p. 621.
Surgical Construction of Conjunctival Cul-De-Sac and Preferred Methods for Partial or Total Socket Restoration. C. Berens and B. Smith. —p. 625.

Corticotropin in Retrolental Fibroplasia.—The authors administered corticotropin (ACTH) to 36 premature infants with retrolental fibroplasia in 1951. Their criteria for instituting therapy were the occurrence of tortuosity of the retinal vessels, neovascularization, and early progressive edema in the periphery of the fundus. Treatment was started only after the process proved progressive over a period of a week or more. The daily dose of corticotropin ranged from 1.7 to 20 mg. per kilogram of body weight per day. The total amount of corticotropin administered per course (accumulated dose) varied from 72 to 1,235 mg., and the duration of the courses from 9 to 33 days. Of the 36 infants, 6 died and 7 had severe hand infection, severe diarrhea, or pneumonia. All deaths occurred in the patients treated for three weeks or longer, while no death occurred when the treatment was continued only two weeks. Of 49 control infants with retrolental fibroplasia not receiving corticotropin, none died and only one had an abscess of the right buttock. It is difficult to assess the results of treatment in a disease of the type of retrolental fibroplasia, which has a high rate of spontaneous regression. Treatment was evaluated by employing it in cases picked by random selection. The results in a previous series of infants with retrolental fibroplasia treated by the authors in 1950 suggested that corticotropin might be effective when given in the early stages of the disease. On the basis of the 1951 series, the authors conclude that corticotropin has no effect on the course of the disease. Its use therefore was discontinued.

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Titles marked with an asterisk (*) are abstracted.

Vitamin E, Corticotropin, and Cortisone in Retrolental Fibroplasia.—Of 38 premature infants with retrolental fibroplasia, 17 were treated systemically with alpha tocopherol acetate (vitamin E) and 21 with corticotropin (ACTH) or cortisone. The patients receiving the vitamin prophylactically or therapeutically were given 50 mg. three times a day. The duration of treatment varied according to the clinical response of the infants. The usual daily dose of corticotropin was 20 to 28 mg. given parenterally in divided doses every six hours. A comparable dose of cortisone was used. The duration of treatment varied from 11 to 37 days. Of the 17 infants, 9 became blind in both eyes. Three became blind or nearly blind in one eye and had impaired vision in the other. Five had normal, or apparently normal, vision in one or both eyes. Ten of these patients had the onset of the disease during prophylactic administration of alpha tocopherol acetate. The results with corticotropin or cortisone were scarcely more encouraging. Of the 21 infants, 9 became blind in both eyes, and three became blind or nearly blind in one eye and had impaired vision in the other. Nine had normal, or apparently normal, vision in one or both eyes. Thus the results obtained with alpha tocopherol acetate, corticotropin, and cortisone were nearly identical.

Alabama State Medical Assn. Journal, Montgomery

21:305-352 (May) 1952

Diagnosis and Treatment of Common Leukorrheas. H. H. Thomas and M. Hagood.—p. 305.
Interesting Case of Hermaphroditism. W. H. Blake Jr.—p. 309.
Benzodioxane Test for Pheochromocytoma. I. A. Koffler and H. L. Holley.—p. 310.

American Heart Journal, St. Louis

43:641-800 (May) 1952. **Partial Index**

*Pericarditis: Clinical and Laboratory Data of 130 Cases. G. R. Herrmann, E. J. Marchand, G. H. Greer and M. R. Hejtmancik.—p. 641.
Lymphocytopenia in Heart Disease. R. Altschul.—p. 653.
Systolic and Diastolic Loading of Heart. E. Cabrera C. and J. R. Monroy.—p. 661.
Direct Venous Pressure Determinations by Use of New Instrument. W. A. Sodeman.—p. 687.
Apical Diastolic Murmurs in Congenital Heart Disease: Rarity of Lutembacher's Syndrome. A. S. Nadas and M. M. Alimurung.—p. 691.
Phonocardiographic Differentiation of Vibratory (Functional) Murmurs from Those of Valvular Insufficiency: Further Observations and Application to Diagnosis of Rheumatic Heart Disease. T. N. Harris and S. Friedman.—p. 707.
Effects of Improper Fitting of Stethoscope to Ears on Auscultatory Efficiency. M. B. Rappaport and H. B. Sprague.—p. 713.
Views on Significance of qR and QR Type Complexes in Right Precordial Leads in Absence of Myocardial Infarction. D. Sodi-Pallares, A. Bisteni and G. R. Herrmann.—p. 716.
Effect of Eccentricity on Spatial Vector Analysis of Electrocardiogram of the Newborn Infant and on Correlation Between Electrocardiogram and Vectorcardiogram. A. I. Schaffer, J. H. Dix and P. Bergman.—p. 735.
Ventricular Tachycardia Following Procaine Amide Hydrochloride (Pronestyl) and Quinidine. G. E. Schreiner and R. T. Kelley.—p. 749.

Pericarditis.—The records of patients in the University of Texas Hospital in whom pericarditis had been diagnosed during the five year period, 1946 through 1950, were reviewed. A total of 130 cases, 89 proved at autopsy and 41 during life, were analyzed. This included only cases in which the diagnosis of pericarditis was substantiated at autopsy, by surgical operation, or by the finding of pericardial fluid, a pericardial friction rub, pathognomonic radiological evidence, electrocardiographic changes, or a combination of significant signs. Pyogenic organisms and uremia were the commonest causes; idiopathic pericarditis was the next commonest type. Other causes were coronary artery disease, cancer, rheumatic fever, tuberculosis, collagen disease, and trauma. Pericarditis is frequently overlooked, but its recognition is important, now that antibacterial and hormonal agents permit curative therapy and earlier and safer preparation for radical surgical treatment. While bacterial pericarditis, including the tuberculous type, has been decreasing in recent years, pericarditis secondary to cardiovascular disease, uremia, and malignant disease has increased with the increase in life span. Conditions that may cause pericarditis should alert the physician to the possibility of pericarditis. The cardinal symptom of pain or distress may be characteristically propagated to the left shoulder or neck or may be only a vague distress in the precordium or the epigastrium. Dyspnea may be the equivalent of, substitute for, or may follow the pain. The pathognomonic sign is the pericardial friction rub, which may often be felt or heard when the breath is held in expiration. Bulging of the precordium or the intercostal spaces or distention of the neck veins may be noted. The sharply demarcated and widened cardiac or upper retrosternal dullness is rarely demonstrable. The auscultatory finding of the friction rub and/or very distantly muffled heart sounds are the most reliable clinical signs. Fluoroscopy, teleradiography, kymography, electrokymography and electrocardiography are the most acceptable accessory diagnostic aids. The treatment of pericarditis is determined by the etiological factor and the anatomic changes. Antibiotics used against primary infection often prevent and/or abort pericarditis. Serous effusions only occasionally require paracentesis. Purulent exudate usually requires surgical drainage. Two cases of tuberculous pericarditis convinced the authors that pericardiectomy should be considered early, immediately after a course of streptomycin and *p*-aminosalicylic acid therapy. Aureomycin may be worthy of trial in patients with acute idiopathic or nonspecific pericarditis.

American Journal of Clinical Pathology, Baltimore

22:403-508 (May) 1952

Stray Light in Filter Photometers. M. N. States.—p. 403.
Cytologic and Histochemical Studies of Radiation Reaction. S. Warren, M. W. Holt and S. C. Sommers.—p. 411.
Possible Prevention of Anti-A Isosensitization Disease by Desensitization of the Mother with Substance A. J. E. Flynn.—p. 418.
New Laboratory Aid in Clinical Diagnosis of Inclusion Disease of Infancy. G. H. Fetterman.—p. 424.
Equation and Nomogram for Approximation of Alkali Requirements in Acidosis: In Vivo Titration with $NaHCO_3$ of Blood of Patients in Acidosis. Procedure for Estimation of pH of Venous and Fingertip Blood with pH Meter. S. Natelson and J. H. Barbour.—p. 426.
Myoblastomas, Neural Origin: Report of Six Cases, One with Multiple Tumors. L. L. Ashburn and R. C. Rodger.—p. 440.
*Chemical Examination of Lung Tissue for Mineral Oil. L. C. Donnelly and B. P. Hecht.—p. 449.
Relationship of Sebaceous Cyst to Benign Nevus. A. F. R. Andresen Jr. and W. F. Enos Jr.—p. 452.
Toxic Effect of Sodium Hydroxide on Tubercle Bacilli. D. Yegian and V. Budd.—p. 456.

Chemical Examination of Lung Tissue for Mineral Oil.—The identification of mineral oil in postmortem examinations of lung tissue is of interest in diagnosis of lipoid pneumonia. The scarlet red (Sudan IV) stain does not distinguish mineral oil from other fats in the body. The authors describe a method that permits extraction of lipoid material from freshly excised tissue or lung tissue fixed in 40% formaldehyde solution (formalin®), employing petroleum ether as a solvent. The separation of naturally occurring lipoid substances from mineral oil in the petroleum-ether extract is effected by interaction with cold, concentrated sulfuric acid. This treatment with acid leads to removal of fatty acids, fixed oils, sterol compounds, and other fatty-acid derivatives without resorting to saponification methods. Mineral oil, which has a saturated hydrocarbon structure, is completely insoluble and inert in concentrated sulfuric acid.

American Journal of Medicine, New York

12:499-618 (May) 1952

SYMPOSIUM ON MULTIPLE SCLEROSIS AND DEMYELINATING DISEASES
Multiple Sclerosis—Clinical Problem. D. Denny-Brown.—p. 501.
Morbid Anatomy of Demyelinative Diseases. R. D. Adams and C. S. Kubik.—p. 510.
Experimental Demyelination in Relation to Human and Animal Disease. E. W. Hurst.—p. 547.
Epidemiologic Characteristics of Multiple Sclerosis. L. T. Kurland. —p. 561.
Trends in Etiologic Researches of Multiple Sclerosis. H. H. Reese. —p. 572.
Is Multiple Sclerosis Caused by a Virus? J. R. M. Innes and L. T. Kurland.—p. 574.
Personality Structure and Psychotherapy in Multiple Sclerosis. O. R. Langworthy and D. LeGrand.—p. 586.
Problems in Evaluating Treatment in Multiple Sclerosis. M. Nathanson.—p. 593.
Tetralogy of Fallot. W. J. Potts.—p. 596.

American Journal of Obstetrics & Gynecology, St. Louis

63:951-1184 (May) 1952. **Partial Index**

*Surgical Management of Carcinoma of Cervix. J. W. Kelso.—p. 955.
Analysis of Fetal Mortality in Cesarean Section: Experience in an Urban Community. A. W. Diddle, H. H. Jenkins, M. Davis and K. A. O'Connor.—p. 967.
Studies on Autonomic Blockage: VI. Mechanisms Regulating Hemodynamic Changes in Pregnant Woman and Their Relation to Hypertension of Toxemia of Pregnancy. N. S. Assali, J. M. Vergon, Y. Tada and S. T. Garber.—p. 978.
Causes of Death in Carcinoma of Cervix Influencing Modern Trends in Treatment: Analysis of 248 Deaths from Charity Hospital of Louisiana at New Orleans. S. V. Ward, T. B. Sellers and J. T. Davis Jr.—p. 989.
Infant Mortality in a Voluntary Hospital. F. J. Hofmeister and H. Paegel. —p. 999.
Correlation of Cytology of Urinary Sediment with Endometrial Histology. E. S. Taylor and P. F. McCallin.—p. 1009.
Recognition and Treatment of Somatic Abdominopelvic Pain. W. C. Eller. —p. 1019.
Use of Protamine Sulfate and Toluidine Blue for Abnormal Uterine Bleeding. W. L. Rumbolz, C. F. Moon and J. C. Novelli.—p. 1029.
*Experience with Pranone and ACTH in Rh-Sensitized Pregnancies. E. G. Holmstrom.—p. 1038.
Is Selective Right Lower Quadrant Surgery in Women Curative? With Report of 200 Cases Studied. W. O. Johnson.—p. 1045.
*Tracheotomy in Eclampsia. C. G. Collins, F. G. Nix, I. Dyer and H. D. Webster Jr.—p. 1052.
Effect on Cesarean Section Babies of Stripping or Milking of Umbilical Cords. R. S. Siddall, R. R. Crissey and W. L. Knapp.—p. 1059.
Congenital and Acquired Lesions of Umbilical Cord and Spontaneous Abortion. C. T. Javert and B. Barton.—p. 1065.
Rupture of Basal (Decidual) Plate in Abruptio Placentae: Pathway of Autoextraction from Decidua into Maternal Circulation. C. L. Schneider.—p. 1078.
Causes of Fetal Mortality at the Sloane Hospital for Women, 1940 to 1949. C. M. Steer and W. P. Kosar.—p. 1091.
Critical Study of Eclampsia in a Municipal Hospital. L. M. Roberts. —p. 1102.
Abuse of Estrogens in Treatment of Leukoplakia of Vulva. C. J. Christy. —p. 1133.
Endometriosis of Vermiform Appendix. C. E. Sutton and J. A. Hardy. —p. 1139.

Surgical Management of Carcinoma of Cervix.—This paper presents Kelso's personal experience with radical surgery in 95 patients with carcinoma of the cervix operated on between Dec. 1, 1945, and July 1, 1951. The operation was more radical than Wertheim's method in that it included extensive dissection of the gland-bearing areas, along with an extremely wide removal of the parametrial tissue and an adequate portion of the vagina, the amount depending somewhat on the stage of the disease. There were only two operative deaths (one from cardiovascular collapse and one from a transfusion reaction). The author hopes to reduce the high incidence of urinary complications (8 cases) by presacral neurectomy. The majority of the patients were given deep x-ray therapy after the surgical treatment. One of the chief advantages of surgical treatment over radiation therapy alone is the emotional stability of the surgical patients; since their tumor has been removed, they are confident of being cured, not doubtful like the patients subjected only to irradiation. The author believes that radical surgery has a place in treatment of cervical carcinoma. However, the patient past 60 or even younger, if in a poor state of health, should be carefully investigated, and, if there is a question as to whether her vascular system will tolerate the operation, she probably should not be operated on. The patient who has had a maximum amount of irradiation should be denied surgery, because in these patients the urinary complications are too frequent and serious.

Pranone® and ACTH Therapy in Rh-Sensitized Pregnant Women.—The results reported by other investigators following administration of anhydrohydroxy-progesterone (pranone®) to Rh-negative women who were pregnant induced Holmstrom to try this method in 35 pregnant women who were sensitized to the Rh factor. The length of time during which the drug was administered and the daily dosage varied, but, in the majority of the patients, the drug was administered in a daily dose of at least 100 mg. for at least 12 weeks. There was no evidence to indicate that administration of anhydrohydroxy-progesterone would influence the outcome of a pregnancy complicated by Rh sensitization. The beneficial effect of cortisone and corticotropin in hemolytic anemias in which circulating antibodies are present suggested that there might be a similar beneficial effect in cases of Rh sensitization. Therefore, the authors administered 100 mg. of corticotropin to four sensitized Rh-negative pregnant women daily for 7 to 10 days. All four of these patients ultimately delivered erythroblastotic stillborn infants.

Tracheotomy in Eclampsia.—Tracheotomy has proved helpful in poliomyelitis, tetanus, and a variety of conditions in which respiratory depression due to obstruction of the tracheobronchial tree by secretions requires prolonged endotracheal aspiration. From 1946 to 1951 Collins and associates cared for 86 patients with convulsive toxemia. Tracheotomy was employed in addition to the customary measures in eight patients with convulsive toxemia and in two patients with nonconvulsive toxemia. Of the seven who died, two had the benefit of tracheotomy. In one of these a second and fatal cerebrovascular accident occurred 13 days following removal of the tracheotomy tube and apparent recovery. In the other case the tracheotomy was performed too late. The authors believe that many of the eight patients having tracheotomy would have died had the procedure not been used. Of the five who died prior to utilization of tracheotomy, four died within 24 hours of admission, exhibiting marked respiratory distress. The other patient died four days after admission, but respiratory failure was a prominent symptom. Tracheotomy need not be used in every case of eclampsia, but it is indicated in cases in which airways and suction fail to maintain adequate pulmonary ventilation, and in which laryngospasm develops. Tracheotomy sets should be a part of the equipment in all delivery units. No ill effects from tracheotomy were observed.

American Journal of Ophthalmology, Chicago

35:627-754 (May [Part I]) 1952

Simple and Rapid Contrast Staining of Trachoma Bodies. L. Poleff. —p. 627.
Effective and Safe Radiation of Anterior Segment of Eye. E. B. Hague. —p. 629.
Results of Beta Irradiation in Ophthalmology: Report of 123 Cases. M. A. Petrohelos.—p. 637.
Applicators for Beta Irradiation of Eye: Review and Comparison. F. M. Wilson.—p. 645.
Practical Suggestions for Preparation and Maintenance of Sterile Opthalmic Solutions. F. H. Theodore and R. R. Feinstein.—p. 656.
*Effect of ACTH on Normal Ocular Tension. C. W. Tillett.—p. 659.
Cortisone in Ocular Disease: Further Studies. J. E. Purnell and I. H. Leopold.—p. 663.
Sulfonamides and Antibiotics in Trachoma. A. A. Siniscal.—p. 671.
Use of Hyaluronidase in Ophthalmology. I. S. Tassman.—p. 683.
Copper Within the Eye 30 Years Simulating Tumor: Report of Case. J. E. Mishler and R. D. Harley.—p. 687.
Explanation of Corneal Haze and Halos Produced by Contact Lenses. V. E. Kinsey.—p. 691.
Neurovascular Mechanism Controlling Ocular Tension in Congenital Glaucoma of Rabbits. E. Schmerl and B. Steinberg.—p. 696.
Plasma Implantations in Cornea. G. W. H. M. van Alphen.—p. 701.

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Critical Study of Lens Metabolism. G. S. Christiansen and P. J. Leinfelder. —p. 21.
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Development of Diabetic Cataracts. J. W. Patterson.—p. 68.
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Studies on Visual Toxicity of Methanol. A. M. Potts and L. V. Johnson. —p. 107.
Electrophysiologic Study of Retina During Metabolic Impairment. W. K. Noell.—p. 126.
Survival Time of Retinal Cells When Deprived of Their Blood Supply by Increased Intraocular Pressure. G. G. Smith and C. D. Baird.—p. 133.
Anterior Chamber of Eye for Investigative Purposes: Site for Transplantation of Fetal Endocrine Tissues and Cancer, and for Study of Tissue Reaction. J. T. Dameron.—p. 137.

Effect of Corticotropin in Ocular Tension.—The effect of corticotropin on the intraocular pressure of normal eyes was studied. The sodium-retaining effect of this hormone has suggested that it might cause some elevation of intraocular pressure. Tillett

observed no significant increase in intraocular pressure in 15 patients with normal or nonglaucomatous eyes while they were being treated with corticotropin. In the same group no change in visual acuity or refractive error was noted during treatment. In 10 other patients receiving corticotropin the response to provocative tests for glaucoma was negative.

American Journal of Physiology, Baltimore

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Oxygen Consumption of Cardiac Muscle During Shock. W. J. Burdette. —p. 575.
Changes in Blood and Circulation of Dogs Following Explosive Decompression to Low Barometric Pressures. J. P. Kemph and F. A. Hitchcock.—p. 592.
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Independence of Capillary Filtration and Tissue Clearance. C. Hyman, S. I. Rapaport, A. M. Saul and M. E. Morton.—p. 674.
Respiration Associated with Phagocytosis of Brucella. F. A. Beall, E. M. Lerner II and J. Victor.—p. 680.
Oxidative Esterification of Phosphate by Neural Tissue. L. G. Abood and R. W. Gerard.—p. 739.
Physical Chemistry of Contractile Process in Muscle: I. Physiochemical Model of Contractile Mechanism. M. J. Polissar.—p. 766.
Blood Glucose and Food Intake in Normal and Hypophysectomized, Alloxan-Treated Rats. J. Mayer and M. W. Bates.—p. 812.

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Significance to the Surgeon of Roentgen Ray Flat Plate (Scout Film) in Diagnosis of Acute Abdominal Disease. S. McLanahan, C. H. Watt Jr. and J. S. Green III.—p. 586.
Reduction of Intussusception by Barium Enema. M. M. Ravitch and R. H. Morgan.—p. 596.
Mesenteric Thrombosis Following Blunt Abdominal Trauma. W. S. McCune, J. M. Keshishian and B. B. Blades.—p. 606.
Chylous Peritonitis. M. Thompson and W. Buschemeyer.—p. 615.
*Results of Vagotomy During Seven Years: Clinical Observations and Tests of Gastric Secretions. K. S. Grimson, C. R. Rowe Jr. and H. M. Taylor.—p. 621.
Construction of Substitute Gastric Reservoir Following Total Gastrectomy. W. P. Longmire Jr. and J. M. Beal.—p. 637.
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Surgical Considerations of Intrathoracic Aneurysms of Aorta and Great Vessels. D. A. Cooley and M. E. De Bakey.—p. 660.
*Elastic Compression in Prophylaxis of Postoperative Thrombo-Embolism: Critical Study. I. R. Trimble and D. H. Lynn.—p. 681.
Further Experiences in Culdoscopy. J. H. Angell and R. W. TeLinde. —p. 690.
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Use of Viable Pedicle Graft for Repairing Extensive Tracheobronchial Defect. R. S. Penton and O. C. Brantigan.—p. 709.
Unusual Features of Acute Pancreatic Disease. R. J. Coffey.—p. 715.
Effects of Vagotomy, Splanchnicectomy and Celiac Ganglionectomy on Experimentally Produced Spasm of Sphincter of Oddi in Animals. W. W. Shingleton, W. G. Anlyan and D. Hart.—p. 721.
Discussion of Prevention of Injuries to Common and Hepatic Ducts. F. S. Johns.—p. 730.
Timing in Surgical Treatment of Acute Cholecystitis. P. T. DeCamp, A. Ochsner, T. G. Baffes and others.—p. 734.

Results of Vagotomy.—Grimson and associates review the clinical results obtained in 175 patients who were treated by vagotomy, usually combined with gastroenterostomy, during the seven years between June, 1944, and May, 1951. They ascertained the present condition of the patients by questionnaire and, when possible, by interview and examination. Although 28 of the 50 patients treated before August, 1947, by vagotomy alone for duodenal ulcer, and 4 of the 5 thus treated for gastric ulcer, had satisfactory clinical results, the necessity for a secondary gastroenterostomy in 18 and secondary subtotal gastric resection in 3 led to abandonment of vagotomy as the sole surgical treatment. Of the three types of drainage procedure used, pyloroplasty was frequently followed by delayed emptying of the stomach, and exclusion by rapid emptying of the stomach with the "dumping syndrome"; short loop posterior gastroenterostomy gave the best results. Of the entire group of 175 patients, 91.4% had a satisfactory outcome; in 5.14% the results were partially satisfactory, and in 3.43% the results were unsatisfactory. Beneficial effects of vagotomy usually persist. Insulin tests three to seven years after vagotomy produced no free acid or less free acid than in control patients in 25 of the 26 tested.

Elastic Compression in Prophylaxis of Thromboembolism.—Intravascular clotting seems to be primarily due to venous retardation rather than to damage of the intimal vessel wall or physiological alterations in the blood. Since venous return from the legs would be hastened by the use of elastic supports that exert their effect early, continuously, and directly in the vicinity where thrombi are prone to occur, such bandages were applied to both legs from the ball of the foot to the knee in 392 highly susceptible patients in whom 476 surgical operations were performed. The bandages were reapplied every morning for two weeks postoperatively. Only seven of the patients manifested clinical signs of thromboembolism. However, this group includes one patient with venous thrombosis of the greater saphenous vein, one with unexplained postoperative edema of the ankle, and one in whom pulmonary infarction was suspected but not confirmed. Therefore, clinical evidence of deep venous thrombosis was encountered in only three patients and pulmonary embolism in but one patient. All seven patients recovered. These results are similar to those encountered in unselected groups of patients on whom prophylaxis was omitted. Nevertheless, because these patients had a marked predisposition to intravascular clotting, the assumption appears to be warranted that the incidence of this disturbance was limited because of prophylaxis by means of elastic compression.

California Medicine, San Francisco

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Medicine on the March. H. G. MacLean.—p. 315.
Antibiotic Therapy of Abscess of Lung and Bronchiectasis. W. L. Hewitt. —p. 319.
*Management of Abscess of Lung. F. X. Byron.—p. 325.
Diagnostic Problems of Cancer of Lung. S. M. Farber, M. A. Benioff and J. D. Smith.—p. 328.
Conservation of Tissue and Function in Pulmonary Resection: Technique of Anatomical Separation of Segments. B. H. Ramsay.—p. 333.
Early Diagnosis of Carcinoma of Stomach. O. F. Grimes and H. G. Bell.—p. 337.
Observations on Aortic Embolism with Report of 13 Additional Cases. A. B. Wilkinson.—p. 341.
Treatment of Impetigo with Sulfonamide-Urea Powder. R. B. Rees, E. M. Hamlin and J. P. McGinley.—p. 344.
Treatment of Nutritional Anemia in Infants. P. Sturgeon.—p. 346.
Encephalitis in Kern County, California, 1941-1950. W. C. Buss and J. Eaton.—p. 350.

Management of Lung Abscess.—A review of the literature raises doubt as to the advisability of surgical drainage of lung abscess as a definitive procedure. With better methods now available, such as antibiotic therapy and increased facility in pulmonary resection, the high mortality and other hazards of surgical drainage need no longer be accepted as unavoidable. Byron lists the following disadvantages: ineffectiveness in multiple, or complicated abscesses; hemorrhage, since, although most lung abscesses are at the periphery, they may be on fissure surfaces in close proximity to major vessels; persistent bronchopleural cutaneous fistulas; residual bronchiectasis; inadvertent drainage of specific infections, such as tuberculosis or coccidioidomycosis; empyema; and drainage of unsuspected carcinoma. The regimen that the author feels will avoid these complications consists of the use of penicillin in high doses, possibly combined with other antibiotics or sulfonamides, and bronchoscopically directed application of antibiotics and treatment of the swollen draining bronchus as often as required, usually twice a week. This procedure also helps to determine the site of the lesion and to rule out carcinoma or the presence of a foreign body. Another measure is postural drainage, which, to be effective, requires a knowledge of the bronchopulmonary segments and accurate localization of the lesion. The posture must be adjusted to the individual case. The author feels that this regimen will produce healing in 80% or more of cases of acute or simple abscess, and in a smaller percentage of cases of chronic abscess, with sufficient clinical improvement to permit resection.

Cancer Research, Chicago

12:315-386 (May) 1952. **Partial Index**

Evidence for Humoral Factor (or Factors) Concerned in Recovery from Radiation Injury: Review. L. O. Jacobson.—p. 315.
Hyaluronidase Content of Necrotic Tumor and Testis Tissue. E. A. Balazs and J. von Euler.—p. 326.
Electrophoretic Analysis of Plasma Protein Constituents in Rats Bearing Regenerating and Pre-Neoplastic Livers. G. de Lamirande and A. Cantero.—p. 330.
Inhibitor of Desoxyribonuclease in Human White Blood and Bone Marrow Cells, and Its Relationship to Cellular Maturity. H. H. Henstell, R. I. Freedman and B. Ginsburg.—p. 346.
Metabolism of 2-Aminofluorene in Rat. H. R. Gutmann, G. E. Kiely and M. Klein.—p. 350.
Liver Tumor Inhibition and Adrenal Histologic Responses in Rats to Which 3'-Methyl-4-Dimethylaminoazobenzene and 20-Methylcholanthrene Were Simultaneously Administered. H. L. Richardson, A. R. Stier and E. Borsos-Nachtnebel.—p. 356.
Influence of Certain Variables on Incidence of Gastric Neoplasia in Mice of the Br-S Strain. L. C. Strong and W. F. Hollander.—p. 362.
Effect of Nitrogen Mustard on Tumor Incidence and Lethal Mutation Rate in Drosophila. W. J. Burdette.—p. 366.
Effect of Folic Acid on A-Methopterin-Induced Inhibition of Nucleic Acid Synthesis. H. E. Skipper, C. Nolan, M. A. Newton and L. Simpson.—p. 369.
Regression or Survival of Tumor Homiografts in Mice Pretreated with Injections of Lyophilized Tissues. N. Kaliss.—p. 379.
Influence of Sarcoma 180 on Adenocarcinoma 755 in Mouse. S. Graff, W. Antopol, C. Zagal and F. Agate.—p. 383.

Georgia Medical Association Journal, Atlanta

41: 179-226 (May) 1952

Better Practice of Medicine. W. F. Reavis.—p. 184.
*Renal Lithiasis: Its Treatment and Prevention by Increasing Protective Urinary Colloids with Hyaluronidase. A. J. Butt, E. A. Hauser and J. Seifter.—p. 185.
Anesthesia for Femoral Neck and Intertrochanteric Fractures. K. Byers.—p. 191.
Back Pain. P. L. Rieth.—p. 194.
Role of the Greater Occipital Nerve in Production of Headache. E. G. Edwards.—p. 198.
Clinical Notes on Chronic Relapsing Pancreatitis. A. M. Snell.—p. 202.

Hyaluronidase in Renal Lithiasis.—The clinical application of increasing protective urinary colloids by parenteral injection of hyaluronidase is a new concept in the treatment and prevention of renal lithiasis. The first 20 patients studied by Butt and associates had multiple, bilateral, and rapidly recurring renal calculi. They had passed numerous stones at regular intervals over a period of years and developed stones within weeks or a few months. In these patients, no regimen of therapy had been effective in reducing the formation or reformation of stone before hyaluronidase therapy had been instituted. Subcutaneous injection of 150 turbidity reducing units (T.R.U.) of hyaluronidase mixed with 1 cc. of sodium chloride solution was regulated individually by observing the duration of increased colloidal activity after injection of the drug, so that this protective activity was maintained at an increased level. These patients have been receiving hyaluronidase for from 11 to 14 months, and no other form of therapy to combat stone formation has been employed. In 17 of these 20 patients no new stone formation or growth of existing stones occurred when the drug was taken properly. Three apparent failures are analyzed. In a second series of 10 patients with rapidly forming stones, larger doses of hyaluronidase, averaging 300 turbidity reducing units every 25 to 48 hours, were given. These patients have been observed for from 6 to 10 months. In this group, there has been no new stone formation or growth of existing stones, as evidenced by roentgenograms made at 30 to 60 day intervals.

Industrial Medicine and Surgery, Chicago

21:197-250 (May) 1952

Clinical Ballistocardiography—Value and Limitations of Portable Ballistocardiograph in Detection of Heart Disease. S. C. Franco.—p. 197.
*Personality Appraisal of the Injured. H. Monheimer.—p. 206.
New Anti-Tuberculosis Drugs. F. R. Ferlaino.—p. 213.
Trends in Compensation Attitudes. N. S. Symons.—p. 216.
First Aid Guide for the Small Plant. The Detroit Plan Manual.—p. 229.

Personality Appraisal of the Injured.—This report describes behavior reactions observed in patients who present themselves at the dispensary of a large industrial hospital, and is presented in order that the psychological factors operative in both the patient and the physician might be understood. It was found that the clinical phenomena could be separated into groups according to the predominant behavior patterns. Cases representative of narcissism, dependency, aggression, and anxiety are presented. Such regressive modes of behavior that appear immediately after injury tend to disappear spontaneously after a short time in relatively normal persons, but it was also observed that the attitude of the physician at times contributed significantly toward acceleration or delay of recovery. It apparently can even determine whether recovery or permanent disability will result in cases in which the patient's adjustment was originally precarious. The physician's own narcissistic and dependent tendencies may be such as to produce within himself a sympathetic identification with the patient. The latter senses the physician's anxiety and uses it to augment his own, thereby producing intensification and prolongation of the symptoms. The physician who understands what is going on in the patient as well as within himself can be objective in his sympathy, thus avoiding mismanagement. The physician may be justified in assuming the role of parent-substitute, acting as sort of an anchor while the patient is undergoing the psychic readjustments necessary to the resumption of normal functioning. Neglect or the "brush-off" creates in the patient a feeling of abandonment and further helplessness, but the over-anxious physician may harmfully augment the patient's fears. The employment of counter-aggression could hardly be expected to act as a therapeutic measure in combating the unreasoning pathological hostility of the aggressive patient. The persistence of neurotic symptoms past the acute stage is an indication for more extensive psychological investigation and treatment.

Journal of Clinical Investigation, Cincinnati

31:433-532 (May) 1952

Measurement of Hepatic Blood Flow in Dog by Bromsulphalein Method. A. Y. Werner and S. M. Horvath.—p. 433.
*Changes in Plasma Potassium Level After Epinephrine in Normal Human Beings and in Persons with Epilepsy. A. Dury, J. W. Holler and C. Smith.—p. 440.
Renal Clearances of Grass Polysaccharide: Observations on Glomerular Porosity and on Relation of This Function to Proteinuria in Renal Disease. J. Beattie and A. C. Corcoran.—p. 445.
Suppression of Sodium Excretion by Colon in Congestive Heart Failure and Cirrhosis of Liver Demonstrated by Use of Cation Exchange Resins. E. Y. Berger and J. M. Steele.—p. 451.
Urinary Excretion and Thyroid Uptake of Iodine in Renal Disease. W. F. Perry and J. F. S. Hughes.—p. 457.
Relationship of Electrically Induced Pain to Amperage and Wattage of Shock Stimuli. H. E. Hill, H. G. Flanary, C. H. Kornetsky and A. Wikler.—p. 464.
Effects of Anxiety and Morphine on Discrimination of Intensities of Painful Stimuli. H. E. Hill, C. H. Kornetsky, H. G. Flanary and A. Wikler.—p. 473.
Hormone Excretion in Liver Disease. F. C. Dohan, E. M. Richardson, L. W. Bluemle Jr. and P. György.—p. 481.
Effect of Epinephrine (USP), 1-Epinephrine, and 1-Norepinephrine on Glomerular Filtration Rate, Renal Plasma Flow, and Urinary Excretion of Sodium, Potassium, and Water in Normal Man. C. M. Smythe, J. F. Nickel and S. E. Bradley.—p. 499.
Influence of Cortisone upon Diurnal Rhythm of Renal Excretory Function. J. D. Rosenbaum, B. C. Ferguson, R. K. Davis and E. C. Rossmeisl.—p. 507.
Studies on Proteolytic Enzyme in Human Plasma: VII. Fatal Hemorrhagic State Associated with Excessive Plasma Proteolytic Activity in a Patient Undergoing Surgery for Carcinoma of Head of Pancreas. O. D. Ratnoff.—p. 521.
Hepatic Blood Flow in Resting Hypertensive Patients Before and After Splanchnicectomy. R. W. Wilkins, J. W. Culbertson and A. A. Rymut.—p. 529.

Plasma Potassium Level Following Epinephrine Injection in Epileptics.—The changes in plasma levels of potassium, sodium, and glucose at 4, 20, 60, and 120 minutes after an intramuscular injection of 0.4 mg. of epinephrine were determined in normal human subjects and in subjects with idiopathic epilepsy. There was a significant difference in the extent of plasma potassium fall and the pattern of change in the epileptic group as compared to that in the normal group. The plasma sodium levels were not affected in either group. An explanation of this difference is suggested by the results of a similar investigation in patients with Addison's disease and in certain animal studies. The pattern of plasma potassium change following administration of epinephrine in subjects with Addison's disease was similar to that reported here for epileptic subjects, but the extent of change

in the former group was greater. Whether the difference in plasma potassium change after epinephrine in normal and epileptic subjects is related to a difference in the functional status of the adrenal cortex or some other factor must be studied further. However, evidence, admittedly of a preliminary nature, that suggests this relationship is available and demonstrated in the form of a scatter diagram of the patterns for normal and epileptic subjects after epinephrine injection and after injection of 25 mg. of corticotropin. Statistical analysis of the results showed that the mean change was significantly lower in the epileptic group than in the normal group. It is noteworthy that Aird and Gordon recently reported that the frequency of epileptic seizures was decreased in epileptics treated with desoxycorticosterone.

Journal of Immunology, Baltimore

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Interaction of Erythrocytes and Antibodies with Synthetic Polymers and Some Other Substances. W. T. Frazer and M. Calvin.—p. 335.

Study of Infections Caused by Mumps and Newcastle Disease Viruses: I. Specific and Non-Specific Serologic Relations. H. A. Wenner, M. H. Jenson and A. Monley.—p. 343.

Id.: II. Some Properties of Specific and Non-Specific Serum Hemagglutination Inhibitor Components. H. A. Wenner, A. Monley and M. H. Jenson.—p. 357.

Response to Intracutaneous Inoculation of BCG as Index of Native Resistance to Tuberculosis. M. B. Lurie, P. Zappasodi, E. Cardona-Lynch and A. M. Dannenberg Jr.—p. 369.

Effect of ACTH and Cortisone on Concentration of Circulating Diphtheria Antitoxin. W. P. Havens Jr., J. M. Shaffer and C. J. Hopke Jr.—p. 389.

Blood Group Activity and Composition of Polysaccharides from Pancreatins. E. Verney and A. H. Stock.—p. 401.

Tuberculin Reaction: V. Antigenicity of Chloroform Soluble Tuberculoprotein Wax. Q. Myrvik and R. S. Weiser.—p. 413.

Effect of Malaria Infection on Titer of Complement and Its Components in Ducks. R. B. McGhee.—p. 421.

Homogeneity of Purified Diphtheria Toxins and Toxoids as Investigated by Semisolid Precipitin Technic. H. E. Bowen.—p. 429.

Studies on Certain Viruses Isolated in Tropics of Africa and South America. Immunological Reactions as Determined by Cross-Neutralization Tests. K. C. Smithburn.—p. 441.

Studies on Certain Viruses Isolated in Tropics of Africa and South America. Immunological Reactions as Determined by Cross Complement-Fixation Tests. J. A. Kerr.—p. 461.

Journal Lab. and Clinical Medicine, St. Louis

39:673-836 (May) 1952

Biologic Decay Rates of Chloride in Normal and Diseased Man, Determined with Long-Life Radiochlorine, Cl^{36}. C. T. Ray, G. E. Burch and S. A. Threefoot.—p. 673.

Serial Observations of I^{131} Levels in Plasma as Aid to Diagnosis of Hypothyroidism. H. Rollman, D. W. Petit and P. Starr.—p. 697.

Organ Blood Volume Measurements in Normal Rats. A. E. Lewis, R. D. Goodman and E. A. Schuck.—p. 704.

Effect of L-Nor-Adrenaline on Electrolyte Excretion in Normal Man. T. N. Pullman and W. W. McClure.—p. 711.

Ergothioneine Content of Human Erythrocytes; Effect of Age, Race, Malignancy, and Pregnancy. O. Touster and M. C. Yarbro.—p. 720.

Fate of Choline in Rats With and Without Experimental Hepatic Injury. H. Popper, J. de la Huerga and D. Koch-Weser.—p. 725.

Biochemical Aspects of Nasal Polyps. L. Eichelberger and J. L. Baldwin.—p. 737.

Modified Globin: II. Chemical Changes in Human Globin Produced by Alkaline Modification. H. M. Vars and G. E. Boxer.—p. 743.

Influence of Cerebrospinal Fluid upon Cerebral Blood-Flow Determination. R. W. Alman, A. N. Bessman, G. J. Hayes and J. F. Fazekas.—p. 752.

Normal Distribution of Serum Protein Levels in Acute Poliomyelitis Patients. A. J. Steigman, W. A. Brodsky and R. N. Stephens.—p. 757.

Development of Resistance to 4-Acetylaminobenzaldehyde Thiosemicarbazone by Mycobacterium Tuberculosis. C. A. Colwell, M. Moravec, Y. Furutani and G. Ballard.—p. 761.

Experimental Study of Wound Healing: II. Effects of Various Substances on Wound Healing. H. Necheles, N. C. Jefferson, C. W. Phillips and others.—p. 767.

Evaluation of Wright and Supravital Staining Methods in Infections with Mononuclear Cell Response. I. M. Scheff and G. J. Scheff.—p. 772.

Importance of Sheep Cell Suspension in Complement Fixation Reaction: Description of Accurate Technique for Preparation of Uniform Cellular Suspension. F. C. Collier, A. Reich and J. W. King.—p. 778.

Immunity Response in Mumps with Complications. K. Habel.—p. 785.

J. Neuropathology & Exper. Neurology, Baltimore

11:103-214 (April) 1952

Hemangiomas of Fourth Ventricle. A. E. Walker, H. C. Johnson and K. M. Browne.—p. 103.

Hypothermia Associated with Mesencephalic Lesion. H. A. Kaplan, J. C. Hart and J. Browder.—p. 116.

Cerebral Vascular Complications of Metastatic Carcinoma. L. Madow and B. J. Alpers.—p. 137.

Intracranial Tumors with Extracranial Metastases. N. W. Winkelman Jr., C. Cassel and B. Schlesinger.—p. 149.

Suppression of Clonic Phase in Electrically Induced Convulsions in Man. L. Alexander.—p. 169.

Experimental Torticollis of Rhombencephalic Origin. S. R. Kemberling, H. W. Baird and E. A. Spiegel.—p. 184.

Cerebral Swelling and Cerebral Edema. R. G. Small and W. A. Krehl.—p. 192.

Intracranial Neoplasms with Extracranial Metastases: Report of Two Cases. K. R. Cross and T. J. Cooper.—p. 200.

Journal of Nutrition, Philadelphia

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Attempt to Produce Hemochromatosis Experimentally and Effect of High Levels of Copper and Choline in Diet. N. Kaufman, J. A. Cartaya, P. L. White and others.—p. 433.

Relationships Between Intake and Serum Levels of Ascorbic Acid, Vitamin A, and Carotene of Selected Groups of Children with Physical Signs of Vitamin Deficiencies. S. B. Merrow, R. F. Krause, J. H. Browe and others.—p. 445.

Tocopherol Content of Human Milk and of Cows' Milk Products Used for Infant Feeding. P. L. Harris, M. L. Quaife and P. O'Grady.—p. 459.

Growth Response and Vitamin B_{12} Tissue Levels in Vitamin B_{12}-Deficient Rats and Chicks Fed Riboflavin, 5,6-Dimethylbenzimidazole and Related Compounds. J. M. Cooperman, B. Tabenkin and R. Drucker.—p. 467.

Effect of Fasting or Protein Depletion upon Body Weight, and Fat, Nitrogen, and Choline Content of Livers of Choline-Deficient Rats. O. M. Hale and A. E. Schaefer.—p. 479.

Effect of Dietary Fat on Reproductive Performance and Mixed Fatty Acid Composition of Fat-Deficient Rats. F. A. Kummerow, H. P. Pan and H. Hickman.—p. 489.

Measurement of Fat Absorption and Distribution Using Eleostearic Acid. J. F. Mead, D. L. Fillerup, A. B. Decker and L. R. Bennett.—p. 499.

Total Plasma Protein and Plasma Fibrinogen in Ascorbic Acid Deficiency and in Scurvy in Monkey. R. J. Salmon and C. D. May.—p. 515.

Journal of Thoracic Surgery, St. Louis

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Anatomic Survey of Anomalous Pulmonary Veins: Their Clinical Significance. J. E. Healey Jr.—p. 433.

Bronchography in Bronchial Cancer and Collateral Ventilation. E. Huizinga.—p. 445.

Physiologic Studies Following Thoracic Surgery: I. Immediate Effects of Thoracoplasty. W. W. Stead and P. H. Soucheray.—p. 453.

Circulatory and Respiratory Effects of Continuous Versus Phasic Lung Inflation in Open-Chest Dogs: Description of Apparatus for Application of Positive Pressure During Inspiration Only. H. A. Frank, A. M. Cahan and H. Banks.—p. 465.

*Successful Removal of Tumor of Heart. E. R. Maurer.—p. 479.

Surgical Treatment of Epiphrenic Diverticulum of Esophagus: Review of Literature and Report of Case Treated by Resection and Esophagogastrostomy. M. E. DeBakey and O. Creech.—p. 486.

Misinterpretation of Findings in Catheterization of Anomalous Pulmonary Veins Adjacent to Mediastinal Dermoid Cyst. G. E. Welch, K. A. Merendino and R. A. Bruce.—p. 495.

Case Report—Unusual Mediastinal Cyst. E. F. Skinner, H. Isbell and D. Carr.—p. 502.

Accessory Lung: Report of Case. B. H. Cotton, K. Spaulding and J. R. F. Penido.—p. 508.

Carcinoma of Intrathoracic Trachea: Excision and Repair by Tantalum Gauze-Fascia Lata Graft: Report of Case. W. G. Cahan.—p. 513.

Lipothymoma: Unusual Benign Tumor of Thymus Gland. N. H. Bigelow and A. A. Ehler.—p. 528.

Successful Removal of Tumor of Heart.—The patient whose case is reported complained of bleeding from the rectum, easy fatigability, and vague discomfort over the anterior chest. There was no history of cardiac decompensation, cough, hemoptysis, or pulmonary disease. Fluoroscopic examination of the chest showed the cardiac silhouette to be greatly enlarged. An angiocardiogram indicated the presence of an extracardiac tumor or cyst. At operation the sixth rib was resected, and the pleural cavity was entered through the rib bed. The pericardium was extremely thin, transparent, and distended, so that it bulged into the right chest. Through the transparent pericardial wall, numerous coils of yellowish gray tissue could be seen. When manipulation of the heart seemed necessary, the patient was given 20 cc.

of 1% procaine by intravenous drip to prevent arrhythmias. A longitudinal incision was made in the pericardial sac, and numerous large loops and coils of adipose tissue bulged into the right chest. The entire tumor was completely delivered down to a common stalk, which was attached to the anterior surface of the left ventricle. The point of attachment of the lipoma to the ventricular wall was separated. As nearly as could be determined, the tumor arose from the superficial layer of the myocardium beneath the epicardium, and penetrated the myocardium for several millimeters. The patient was ambulatory by his second postoperative day, and was discharged on the ninth postoperative day. When seen in a follow-up examination, two and one-half months after the operation, the patient was without complaints. The fresh specimen weighed 3.5 lb. (1.6 kg.). Microscopic examination revealed typical fat cells. There was no evidence of malignant degeneration. Primary lipoma of the heart is a rarity. In a review of the literature only two authenticated cases were found. There seems to be no record in the past of successful surgical removal of a cardiac lipoma. This is the largest primary tumor of the heart ever reported.

Kentucky State Medical Assn. Journal, Bowling Green

50:179-226 (May) 1952

Medical Management of Anuria and Oliguria. C. H. Fortune.—p. 179.
Pediatric Surgery Comes of Age. C. H. Maguire.—p. 186.
Present Status of Cardiac Surgery. J. Johnson.—p. 190.
Deafness—Its Present Day Management. A. L. Juers.—p. 198.
Recent Observations on Frostbite. L. D. Heaton and R. M. Davis. —p. 206.

Maine Medical Association Journal, Portland

43:133-168 (May) 1952

Importance of Preoperative Preparation in Avoidance of Complications During Anesthesia. J. R. Lincoln.—p. 133.
*Immediate Complications of Spinal Anesthesia. C. S. Dwyer and P. B. Thomas.—p. 137.
Cancer of Mouth. G. O. Cummins Jr.—p. 140.
T-Bardrin: New Treatment for Symptomatic Relief of Asthma. M. A. Vickers.—p. 145.
*Tetanus and Tracheotomy. H. E. Lawrence.—p. 147.

Complications of Spinal Anesthesia.—Use of spinal anesthesia in cases not properly selected, inadequate familiarity with the technique, failure to recognize warning signs of untoward reactions quickly, and improper or inadequate treatment of the accidents may bring serious damage or even death to the patient. Dehydrated, debilitated, toxic, poor risk patients who may be considered unable to survive a general anesthetic are definitely not suitable candidates for spinal anesthesia. Using the method routinely for specific surgical procedures is certain to lead to fatalities. In election of this method, the general condition of the patient is the limiting factor, not the operation to be performed. The authors discuss several types of abnormal reactions that the anesthetist must understand to avoid possible damage or even death from spinal anesthesia. The common types of accidents are uncontrolled spread of the anesthetic solution; immediate peripheral circulatory failure with resultant cerebral and medullary hypoxia; intravascular injection; drug sensitivity; and action of the drug directly on the medullary centers. There are also reactions that may or may not result from the use of the spinal anesthetic, since they may occur also with other anesthetic methods or even without them. These include sudden death, pulmonary emboli, cerebral thrombosis, or coronary occlusion.

Tetanus and Tracheotomy.—The case of a 5-year-old boy is presented in whom tracheotomy seemed life saving during a severe attack of tetanus. At first a diagnosis of poliomyelitis was made, but because of opisthotonos, complete rigidity of the abdominal muscles and other signs it was changed to tetanus, and tribromethanol (avertin®) with amylene hydrate was given by rectal catheter. At first only 50,000 units of tetanus antitoxin was available, and this was administered intravenously. Later, more was obtained and 100,000 units was given in the first 24 hours of hospital treatment; 170,000 units were given on the second day, and 100,000 on the third, followed by gradual decrease in the daily dose until the ninth day, when urticaria developed. On the second hospital day an endotracheal tube was inserted because of respiratory obstruction. However, there was still difficulty in maintaining the airway open. A tracheotomy was done on the fourth hospital day. Thereafter the general condition appeared much improved. The need for tribromethanol increased during the first four days. Fluid, protein, vitamin, and electrolyte intake was maintained intravenously. Until the tracheotomy tube was removed, 300,000 units of aqueous procaine penicillin, 100,000 units of crystalline penicillin, and 0.5 gm. of streptomycin were given daily. The patient was discharged after 25 days, with slight residual stiffness of his musculature but otherwise he was normal. Reviewing the recent literature on tetanus, the author says that the typical symptoms of trismus, dysphagia, stiff neck, generalized rigidity, and convulsions are often not present in the early stages, or may be present to such limited degree as to make diagnosis difficult. Treatment of tetanus should include rapid neutralization of toxin in the blood stream, sedation to counteract muscle spasm, administration of fluid, electrolytes, calories and vitamins, prevention and treatment of complications, and good general nursing care. As regards tracheotomy, the author agrees with other observers, who stress that in all except the mildest forms of tetanus early tracheotomy should be performed to eliminate upper respiratory obstruction and to facilitate sucking out the lower respiratory tract.

Medical Annals of District of Columbia

21:239-296 (May) 1952

Clinical Evaluation of Rehabilitation Program for the Tuberculous. D. Leibovici.—p. 239.
Industrial Production and the Physician. R. L. Wells.—p. 250.
The Overweight Executive—Problems and Programs. E. P. Luongo. —p. 253.
Nonspecific Myocarditis: Report of Two Proved and One Probable Case. H. D. Ecker.—p. 256.
Recent Advances in Diagnosis. W. M. Yater.—p. 262.

West Virginia Medical Journal, Charleston

48:83-110 (April) 1952

Management of the Breech. C. S. Flynn.—p. 83.
Air Embolism in Practice of Obstetrics and Gynecology. R. T. Rapp. —p. 86.
Neuronitis Simulating Acute Anterior Poliomyelitis (Case Report). R. A. Ireland.—p. 90.
Retinoblastoma. A. C. Esposito.—p. 93.

48:111-142 (May) 1952

Hemorrhagic Infarction of Bowel. H. C. Myers.—p. 111.
Vasoconstrictors and Spinal Anesthesia. R. M. Tovell and R. J. M. Steven.—p. 116.
Some Observations on Medical Practice and on Medical Education in Puerto Rico. E. J. Van Liere.—p. 123.
Penalty of Compulsory Retirement. R. E. Fitzgerald.—p. 126.

48:143-164 (June) 1952

Infectious Mononucleosis. C. K. Sleeth.—p. 143.
Recent Advances in Ophthalmology. H. V. Thomas.—p. 146.
*Rupture of Arch of Aorta Associated with Chest Injury. J. E. Summers. —p. 149.
Appendiceal-Cutaneous Fistula Through Inguinal Canal (Case Report). J. G. Zekan.—p. 150.

Chest Injury Causing Rupture of Arch of Aorta.—Nonpenetrating crushing injuries of the chest are comparatively frequent in automobile and mine accidents. Pneumothorax, hemothorax, subcutaneous emphysema, injuries of the diaphragm, and injuries of the abdominal viscera should always be watched for in such cases. The man whose case is described in this paper had been crushed between the steering wheel and the truck seat. He had died before reaching the hospital. Externally there were few signs of serious injury. Autopsy revealed that the arch of the aorta just distal to the ligamentum arteriosum had been severed transversely. The left side of the chest was filled with blood. Proximal to the point of injury the arch to the aorta is fixed by the great vessels passing to the neck and upper extremities and distally it is fixed by the intercostal arteries, so that it is difficult to reconstruct the pressure relationships that caused the rupture. The author recalls a report of British investigators who had observed rupture of the descending aorta in 8 of 28 victims of an airplane crash.

FOREIGN

British Journal of Cancer, London

6:1-98 (March) 1952

Arsenic in Suspended Matter of Town Air. F. Coulden, E. L. Kennaway and M. E. Urquhart.—p. 1.
Benzpyrene Content of Town Air. R. E. Waller.—p. 8.
Radioactive Material in Atmosphere. K. B. Dawson.—p. 22.
*Treatment of Advanced Breast Cancer by Hormone Therapy. M. Douglas. —p. 32.
Grading of Osteogenic Sarcoma. C. H. G. Price.—p. 46.
Spontaneous Mammary Adenoma and Carcinoma in RIIIb Mice Deprived of Milk Agent. B. D. Pullinger.—p. 69.
Gland of Predilection for Mammary Nodules in Strain of Mice Deprived of Milk Agent. B. D. Pullinger.—p. 78.
Local Action of 20-Methylcholanthrene and Sex Hormones on Prostatic Grafts. E. S. Horning.—p. 80.
Carcinogenic Activity of N-Monomethyl- and N-Dimethyl-2-Aminofluorene. F. Bielschowsky and M. Bielschowsky.—p. 89.
Use of Cellulose Fibres and Films in Culturing of Tissues. C. Pearce and E. Paterson.—p. 93.

Hormone Therapy in Advanced Breast Cancer.—Since 1940 various types of hormone therapy have been employed in treatment of breast cancer at the Royal Infirmary in Edinburgh. No spontaneous regression of cancer has been observed in over 4,000 cases. The 656 cases here reviewed include patients treated by ovarian irradiation, by surgical castration accompanied by administration of testosterone propionate, by various estrogen preparations (stilbestrol dipropionate, dienestrol, triphenylchlorethylene, and ethinyl estradiol), by ethisterone, and by testosterone propionate alone. It also includes a group treated by irradiation of the pituitary. The observations suggest that in premenopausal women, the treatment of choice is ovarian irradiation, which produced beneficial results in 30% of patients in this category. In women who are five or more years past the menopause, estrogen therapy appears to be the most satisfactory form of treatment. The drug found to be most generally useful was stilbestrol dipropionate, given in doses of 5 mg. twice a day on alternate months. While the results of treatment with testosterone have been disappointing, it appears to be the most appropriate method of treatment for women who are not more than five years past the menopause, and it should be noted that responses can be obtained when the metastases are confined to soft tissues. Pituitary irradiation is no longer used routinely because of the severe systemic disturbance produced. It may be of value in cases in which the effects of ovarian irradiation have passed off. Both estrogens and androgens promote water retention, and the dose should be reduced for a patient with a pleural effusion. Good results were noted with doses of stilbestrol dipropionate as low as 0.5 mg. twice a day. While ordinary methods of histological examination failed to show any correlation between histological type of the tumor and the response to hormone therapy, there may be some differences in the cell that are not detected by present methods.

British Medical Journal, London

1:1043-1092 (May 17) 1952

*Valvotomy for Mitral Stenosis: Further Report, on 100 Cases. C. Baker, R. C. Brock, M. Campbell and P. Wood.—p. 1043.
*Adrenal Cortical Function at Death as Measured by Level of Circulating Eosinophils. P. B. Jennings.—p. 1055.
Conduct of Pregnancy Complicated by Diabetes Mellitus. H. H. F. Barns and M. E. Morgans.—p. 1058.
Two Cases of Diabetes Mellitus in Infants Under 1 Year. H. S. Brodribb, J. McMurray and L. G. Scott.—p. 1060.
Care of the Neonate: Instruction of the Medical Undergraduate. W. S. Craig.—p. 1062.
Antihistamines in Non-Urticarial Dermatoses, and Retrial of Antihistamine Iontophoresis. P. Inman and I. C. Cowan.—p. 1064.
Case of Confluent Chicken-Pox with Haemorrhagic Symptoms. J. P. Marsden and W. J. Coughlan.—p. 1066.
Case of Accidental Generalized Vaccinia. O. A. Finn, J. C. Dick and J. S. Stevenson.—p. 1067.

Valvotomy for Mitral Stenosis.—Baker and associates report the immediate results of valvotomy in 100 patients and observations with longer follow-up of the first 50 of these. The results are good in 32 of 50 patients. Before operation nearly all were seriously disabled. There were 13 deaths in the 100 cases, but in the last 80, the operative mortality was less than 8%. The presence of auricular fibrillation adds to the risk. The authors learned soon that young patients with pulmonary congestion whose hearts were not greatly enlarged could be greatly improved by operation, but experience demonstrated that greater age and a larger heart are also compatible with success. Neither mitral regurgitation, calcification of the mitral valve, nor functional tricuspid regurgitation prevents good results, but gross calcification, especially when associated with mitral regurgitation, makes success less likely. When mitral regurgitation or aortic valvular disease seemed the predominent lesion, operation was not done. Aortic stenosis or regurgitation was, however, an added lesion in 5 of the 50 patients, and this did not prevent success. At least 13 of the 50 had congestive failure, and good results were obtained in many of these, even when the heart was large. When auricular fibrillation and congestive failure have been present for long the ideal time for valvotomy seems to have been missed, but in some patients their presence did not prevent great improvement. Embolism was the cause of death in four of eight patients with auricular fibrillation. Previous embolism does not contraindicate valvotomy. Pulmonary changes may become irreversible in some cases with pulmonary hypertension, but systolic pressures in the pulmonary artery above 100 mm. Hg did not prevent excellent results. Cardiac catheterization was carried out in all patients, but its results rarely changed the clinical impressions and the authors think that valvotomy can be undertaken without it. Mitral valvotomy should be considered in progressive mitral stenosis, especially when orthopnea and recurrent pulmonary edema are present. The risk of recurrent rheumatic carditis in patients under 20 years of age should be considered, and the presence of active carditis is one of the few contraindications to operation. Valvotomy may be an alternative to termination of pregnancy and sterilization; it was carried out in three women during their pregnancies, which then terminated normally. Time will tell how long the improvement after mitral valvotomy can last, but in the two or three years since the earliest operations, there has been no relapse.

Adrenal Cortical Function at Death Measured by Circulating Eosinophils.—Serial eosinophil counts were made until death for 50 moribund patients with various diseases. In 47 (94%) the eosinophil count fell to zero or almost zero and remained so until death. Suddenness of death seemed to be an important factor in the three patients in whom eosinopenia did not develop. The eosinophil count rose from low levels to normal in 12 other patients who recovered from the moribund state. This study indicates that the adrenal cortex apparently does not fail during prolonged stress, but continues to show hyperactivity up to the very moment of death; consequently supportive therapy with cortical substances is not indicated in terminal states. The eosinophil count seems to be of only limited prognostic significance in such cases, since changes usually accompany or occur later than the clinical findings rather than precede them.

Cuore e Circolazione, Rome

36:1-64 (Feb.) 1952

*Late Prognosis in Women with Rheumatic Heart Disease in Relation to Pregnancy. A. Poppi, G. Labò and T. Franco.—p. 1.
*First Signs of Digitalis Intoxication in Healthy Persons and in Persons with Heart Disease. A. Masoni.—p. 36.

Rheumatic Heart Disease and Pregnancy.—Of 650 women in whom rheumatic valvular disease was found or aggravated during pregnancy, 250 were followed 7.1 years after the last pregnancy. Thirty-six had died at the average age of 34.4 years after surviving for an average of 3.5 years following the last pregnancy and 16.7 years following the first rheumatic attack. An unfavorable influence of pregnancy and delivery on the course of the rheumatic disease is suggested, since most of these patients died younger than adult patients with rheumatic heart disease who were never pregnant. A reactivation of the rheumatic process seems to be responsible in the primigravida, whereas in the plurigravida it may be an excess load on the circulation due to harder work brought about by the increased number of children. However, in women with more than three pregnancies death need not be related to pregnancy but to natural evolution of the disease. In one-third of the 650 patients signs of heart disease were first seen during pregnancy or soon after, whereas in 73% the symptoms were aggravated then. At the time of the follow-up, such

signs as increased erythrocyte sedimentation rate indicated persistent rheumatic activity. In 80% circulatory efficiency was diminished. The occurrence of circulatory insufficiency seemed to be related to number of pregnancies, activity and duration of rheumatic infection, and age at first pregnancy, being more frequent in primigravidas less than 25 years of age. Dyspnea, palpitation, and precordial pains were common, but the most important signs of circulatory insufficiency were cyanosis, pulmonary and hepatic stasis, and tachycardia. Atrial fibrillation was related to age and probable duration of the rheumatic infection but not to parity. Pregnancy does not aggravate the rheumatic infection if it occurs many years after the first rheumatic attack and if there are only one or two pregnancies.

Digitalis Poisoning.—To study the earliest signs of digitalis intoxication the author gave digitalis in daily doses of 0.15 to 0.40 gm. to 20 patients with and 10 patients without heart disease. Before giving the drug, electrocardiograms, arterial blood pressure, pulse rate, erythrocyte examination, differential blood count, and coagulation time were recorded. On the second day of therapy the blood clotting time was shortened, changes in systolic and diastolic pressure were insignificant, the number of red blood cells remained unchanged, increase of eosinophils was pronounced in four patients, and the decrease in pulse rate was rather constant but not marked. The most important signs of digitalis intoxication were seen in the electrocardiograms, which were compared with the clinical symptoms to determine which changes could be attributed to the therapeutic effects of the drug and which to saturation or intoxication. In healthy persons the changes were less constant and appeared later. In patients with normal sinus rhythm a prolongation of the PQ segment, even if mild and within normal values, often coincided with the therapeutic optimum and preceded the initial sign of intoxication. In patients with auricular fibrillation the therapeutic action of the drug was manifested by a decreased frequency and disappearance of extrasystoles that had been present, whereas the toxic symptoms were immediately preceded by reappearance of ventricular extrasystoles. These electrocardiographic changes indicate a toxic effect of digitalis either on the autonomic nervous system or on the myocardium. The study of serial electrocardiograms may be of help in avoiding side-effects caused by administration of too much digitalis.

Indian Medical Gazette, Calcutta

87:1-34 (Jan.) 1952. **Partial Index**

Primary Carcinoma of Fallopian Tube: Report of Case with Unusual Histological Features. C. M. Rangam and S. Rangan.—p. 3.
*Mitigation of Fluorosis (Experimental): Part I. T. K. Wadhwani.—p. 5.
Effect of Dihydrostreptomycin in Pleurisy with Effusion. P. N. Laha. —p. 9.

Mitigation of Fluorosis.—The first symptom of chronic fluoride poisoning is mottling of the enamel of teeth. When toxic quantities of fluorides are ingested over a period of 20 to 30 years, fluorosis in man is manifested by excessive calcification of ligaments, tendons, and fasciae, the production of osteophytic formations on various bones, almost complete synostosis of the various joints, especially of the vertebral column, and nervous symptoms of mechanical pressure due to encroachment of bone on the spinal cord. Mottled enamel, although more prevalent than fluorosis of bones, is not serious, but fluorosis of bones is a major malady causing great suffering in human beings and in cattle in certain regions of India. Studies have been carried out in experimental animals by different workers for investigating the possibility of reducing the toxicity of ingested fluorine by dietary and chemical means. The author of this report studied the effect of vitamin C in monkeys with fluorosis. When the administration of fluoride was discontinued in monkey with severe bone fluorosis, the animals did not show signs of appreciable improvement either in the general appearance or in the size of the exostoses. When the animals were given 20 mg. of vitamin C daily for 12 weeks, the exostoses either diminished in size or disappeared. The ameliorative effect of vitamin C in monkeys was noticed within 10 days of its administration in the increased activity and appetite of the animal. The restoration of skeletal structures to some sort of normalcy, however, requires administration of vitamin C for longer periods along with the withdrawal of fluorine from the ration. These findings indicate a method of mitigating the toxicity of ingested fluorine in man in areas of endemic fluorosis.

Journal of Endocrinology, London

8:89-186 (April) 1952

Milk-Ejecting Activity of Extracts of Posterior Pituitary Gland. W. G. Whittlestone.—p. 89.
Effects of Thyroxine and Thiouracil on Tuberculin Reactions of Guinea-Pigs. F. B. Leech and A. B. Paterson.—p. 96.
Fate of Eosinophils in Hormonally Induced Eosinopenia and Its Significance. Z. Z. Godlowski.—p. 102.
Growth of Oocyte and Follicle in Adult Rat. A. M. Mandl and S. Zuckerman.—p. 126.
Effects of Some Water Soluble Steroids on Uterus. J. M. Robson and A. A. Sharaf.—p. 133.
Effect of Adrenaline on Cell Content of Blood and Saliva of Normal Man. F. N. Ghadially.—p. 138.
Role of Neurohypophysis in Milk-Ejection Reflex. B. A. Cross and G. W. Harris.—p. 148.
Experimental Study of Post-Partum Endometrial Repair in Guinea-Pig and Rat. A. Sharman.—p. 162.
Calculation of Dose-Response Line in Quantal Assays with Special Reference to Oestrogen Assays by Allen-Doisy Technique. J. D. Biggers.—p. 169.
Effects of Oestradiol on Skeletal Muscle and Liver of Rat. D. F. Cole. —p. 179.

Journal of Tropical Medicine and Hygiene, London

55:97-120 (May) 1952

Treatment of Hymenolepis Nana (Dwarf Tapeworm) Infection with Quinacrine Hydrochloride (Atebrin). P. C. Beaver and W. A. Sodeman —p. 97.
*Congenital Cataract and Maternal Smallpox. D. B. Jelliffe.—p. 99.
Yaws and Flies: Past and Present Opinions on Role of Flies in Transmission of Framboesia Tropica. C. C. Barnard.—p. 100.

Congenital Cataract and Maternal Smallpox.—It is well-established that some virus diseases in the pregnant woman may be followed by various congenital anomalies in the child. This has been shown particularly clearly in maternal rubella, but is also possibly true of varicella, mumps, influenza, hepatitis, and poliomyelitis. In this paper a child is described who had a cataract involving the whole of the left lens. During the third month of pregnancy the mother had had a severe febrile disease, which presumably was smallpox. It is assumed that the infant's congenital cataract may have resulted from viral damage to the developing embryo, in the same way as has been described in cases of maternal rubella.

Tidsskrift for Den Norske Laegeforening, Oslo

72:227-262 (April 15) 1952. **Partial Index**

Place of Bronchoscopy in Otolaryngology. T. Leegaard.—p. 227.
*Prefrontal Leukotomy: Report on 143 Cases. S. Rimestad.—p. 230.
Hereditary Occurrence of Cataract. C. L. Laane.—p. 239.
Allergy to Heparin. O. Midttun.—p. 241.

Prefrontal Leukotomy.—Follow-up examination of the 143 patients from Valen Sjukhus, who were subjected to leukotomy from 1949 to 1951 shows five deaths, of which three were postoperative, giving a postoperative mortality of 2.1% and a total mortality of 3.5%. Convulsive seizures after the operation occurred in 7.7%. One patient was hemiplegic for three months. The number of complications has been decreasing with improvement in the operative technique. Rimestad observed no connection between the condition immediately after prefrontal leukotomy and the later result. The prospect for recovery or sufficient improvement to allow discharge appears to be best in cases of short duration. Fifty-four patients have been discharged; this number comprises 16 of the 29 patients who had been ill less than five years and 38 of the 114 who had been ill more than five years. The behavior of 66 of the 84 still hospitalized is improved. The importance of adequate postoperative care is stressed, with special emphasis on occupational therapy. The results to date are considered promising. Further follow-up studies will be made.

BOOK REVIEWS

Health Resources in the United States: Personnel, Facilities, and Services. By George W. Bachman and associates. Cloth. $5. Pp. 344. Brookings Institution, 722 Jackson Pl., N. W., Washington 6, D. C., 1952.

The rapid expansion and great diversity of medical facilities and personnel in this country since the turn of the century is shown in this latest publication of the Brookings Institution. The purpose of this volume is, according to the author, to serve as a "bench mark" by which to measure future developments in the nation's health. Dr. Bachman was assisted in this study by a large staff of experts.

Coming at this time, when a dozen or more organizations ranging from private groups to quasigovernmental, even highly political, commissions are undertaking studies into the various phases of health, the great importance of this volume is evident. It contains a wealth of basic material, the result of three years' endeavor, and the sifting of many thousands of pages of original data, facts, and figures supplied by more than 700 public and private organizations working in the field of health.

In its objectivity, the work is in marked contrast to many so-called studies, the purpose of which is not essentially to find the facts but to attempt to prove inadequacies and shortcomings of the present practice of medicine in order to build up background material for future inroads by the government into the fields of medical service, or for some other predetermined ends. Indeed, the study builds up a splendid case for the present system of medical practice, with many figures and facts showing the great progress that has been made in the past 50 years in the health of the nation. The advances in the field of health since the beginning of the century give cause for pride in what has been done and give an indication as to what can be done in the future.

"Progress in the realm of health in recent years has affected virtually every person in the United States," reads the introduction of the report. "Many diseases have been brought under control, death rates have dropped and the chances for longer life have greatly increased. The control of the communicable diseases has become so far advanced that attention is being directed more and more to the control of the chronic degenerative diseases and the high accident rate in order to make possible further declines in death rates and further increases in life expectancy. . . . The increasing importance of the diseases of the aged is having a profound effect upon the organization of health resources."

The present volume, comprehensive as it is, does not extend into all areas of the health field but is limited to a review of the state of the nation's health (part 1), a factual inventory of health personnel (part 2), and facilities and services in existence in the United States in 1950 (part 3). It is stated that no attempt has been made to "furnish a solution to health problems, but the assembling of existing information on health resources in a single volume should provide a basic and convenient research tool for an appraisal of health services available to the American people."

"The core of the nation's health resources is made up of the 200,000 or more doctors of medicine who bear the major responsibility for the control and direction of the available facilities and services," the report states. "Health services are in a large measure personal services given by a physician in the patient's home, the practitioner's office, or in the community hospital. . . . A recognition of preventive health measures and rehabilitation services as integral parts of the problem broadens the scope of the inventory."

The inventory of personnel begins with the doctors of medicine and then branches out to include the auxiliary, allied, and "competing" occupational groups, such as the osteopaths.

The report offers no panacea for medical problems. It does not present anything dramatic or startling, but it is a great storehouse of figures, tables, and information, giving in one volume over-all statistics in each of the principal categories that go to make up the nation's health service. This is done in condensed and understandable form. It confirms many previously stated facts, and it will serve as a convenient and worth-while reference source, an indispensable guide to all those interested in the subject. Copies should be in the libraries of state and county medical societies, in the libraries of health councils, and in the public and school libraries throughout the nation.

Socialized medicine and compulsory insurance is not discussed, but the report states that in the present controversy health and economics have become barely distinguishable as separate problems. It makes a plea for knowledge of the basic, underlying facts before attempting to obtain an ultimate solution to the many complex problems in the health field, including "the cost and financing of medical care and the role of the federal government in the field of health." Other special studies in the health field for which this volume sets the stage are to follow.

Special attention is received in the volume by personnel other than physicians, dentists, and nurses. These include midwives, occupational therapists, medical and psychiatric social workers, public health educators, sanitary engineers, chiropodists, osteopaths, and chiropractors. A separate chapter is devoted to group medical practice, dividing the field into service, reference, diagnostic, and single specialty groups. Special consideration is given to the Health Insurance Plan of Greater New York.

In part 3, dealing with facilities and services, it is interesting to note that in 1950 the average length of stay per patient in government hospitals was 16.9 days as against 8.1 days in nonprofit and 5.9 days in proprietary hospitals.

A chapter is devoted to "specified diseases and disabilities" and deals with mental illness, cardiovascular diseases, cancer, tuberculosis, venereal disease, poliomyelitis, multiple sclerosis, diabetes, blindness, deafness, alcoholism, and drug addiction. Each of these is treated according to its facilities and organized programs. Environmental health, health services in the armed forces, veterans' services, and Indian services have special attention. Health and safety services in industry are discussed in terms of their paramount importance to production. Evidences of growth and results have been derived from surveys made in conjunction with the National Association of Manufacturers and the American College of Surgeons.

In general, according to the report, the larger plants provide good facilities and make available dependable services in accordance with high professional standards. The smaller the plant the less likely it is that these conditions will prevail. The larger plants spend on the average $25.90 per employee per year for health, medical care, and safety. In return, there is substantial evidence that injuries and occupational disease are reduced, workmen's compensation costs are lowered, costs of production are decreased, and there are favorable effects on employee relations, absenteeism, labor turnover, and standing in the community. Current trends indicate increasing interest in eye care, dentistry, hearing loss prevention, and home visits. Prepaid health plans were reported by 85% of these companies, and in a substantial number dependents were included.

As no attempt has been made for analysis, sometimes the bare statistics may be misleading. As an example, in dealing with personnel the report makes little or no effort to get behind these superficial statistics and analyze or interpret the problem involved in producing health personnel or in estimating the adequacy of present personnel. The report shows a marked variation in the ratio of physicians to population in the different geographic areas but does not bring out some of the basic and underlying reasons why there is such a variation. The report gives a ratio of 127 physicians per 100,000 population, while other reports, among them a recent one by the American Medical Association, show that there are approximately 135 physicians per 100,000 population.

That such a study has been made into such a complex and intricate problem and has resulted in such an understandable and intelligible volume is indeed an accomplishment. To break

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The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

down the field into subjects, basic categories, and fundamental headings alone is no mean effort.

Finally, it is now undeniably clear that there are more facilities and more health services throughout America and that more experts and highly trained persons are devoting their lives and are giving their time and energy to safeguard the health of the average American than anyone ever imagined before Dr. Bachman and the Brookings Institution made their study.

Diagnostic and Experimental Methods in Tuberculosis. By Henry Stuart Willis, M.A., M.D., F.A.C.P., Superintendent and Medical Director, North Carolina Sanatoria, McCain, North Carolina, and Martin Marc Cummings, M.D., F.C.C.P., Director, Tuberculosis Research Laboratory, Lawson Veterans Administration Hospital, Chamblee, Georgia. Second edition. Cloth. $10. Pp. 373, with 40 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1952.

The first edition appeared in 1928 under the title of "Laboratory Diagnosis and Experimental Methods in Tuberculosis," with an introduction by Allen K. Krause, who stated that, in spite of the availability of efficient methods, "there was much to be desired in the way of diagnosis." He observed, "Where we are lacking is in performance." Since then performance has improved, but too slowly, and there is still too great a lag in diagnosis. This edition has been almost completely rewritten as a result of advances, particularly in diagnostic methods and chemotherapy, and gives adequate and representative information on essential features of the laboratory approach to tuberculosis. The book gives minimal basic knowledge and historic background for tests and methods, placing them in perspective, and at the same time giving them practical value. There is a brief treatise on the secretions, excretions, and fluids of the tuberculous body, a section on the ways of detection and cultivation of the tubercle bacillus, one on related clinical and laboratory methods, which includes the use of tuberculin, BCG vaccine, and chemotherapy, and several chapters on experimental methods. An example of differential diagnosis is the brief discussion of two of the fungus diseases readily mistaken for tuberculosis (clinically and roentgenologically), which can be promptly diagnosed in the laboratory. Like all texts, this edition possesses certain shortcomings that can be readily detected by the experienced tuberculosis investigator, but as a guide containing the minimal basic knowledge required of the laboratory worker and practicing physician as well as public health officials and medical students, it is a special and worth-while compact volume on tuberculosis. The rewriting was essential and should be more frequent if the functional value is to be maintained in practice.

Encyclopedia of Chemical Technology. Volume 8: Ion Exchange to Metal Plating. Edited by Raymond E. Kirk, Head, Department of Chemistry, Polytechnic Institute of Brooklyn, Brooklyn, N. Y., and Donald F. Othmer, Head, Department of Chemical Engineering, Polytechnic Institute of Brooklyn. Assistant editors: Janet D. Scott and Anthony Standen. Cloth. $30; subscription price, $25. Pp. 944, with illustrations. Interscience Publishers, Inc., 250 Fifth Ave., New York 1, 1952.

Volume 8 alphabetically covers topics from ion exchange to metal plating. Other subjects covered are iron, iron compounds and iron preparations of medical interest, isotopes, itaconic acid, ketenes, ketones, ketonimine dyes, a discussion on planning laboratory layouts and buildings, lactams, lactic acid, lactones, lamination and laminated products, lamp manufacture, laundering, lead, lead alloys, lead compounds and lead poisoning, leather and tanning, lecithin, lignin, lignite, lime and limestone, linen, linoleum, lipides, a summary of the literature of chemical technology, lithium compounds, low-temperature technique, lubrication and lubricants, luminescent materials, magnesium, magnesium alloys and magnesium compounds, magnetic properties, magnetic separation and magnetic substances, malaria chemotherapy, maleic and fumaric acid, malonic acid and its derivatives, malts and malting, manganese, manganese alloys and manganese compounds, manufactured gas, margarine, mass spectrometry, matches, meat and meat products, melting and freezing temperatures, mercaptans, mercury, mercury compounds and mercury preparations, and metallic coatings and metallography. The high standards that exist in the previous volumes are maintained in this one.

Surgery and the Endocrine System: Physiologic Response to Surgical Trauma; Operative Management of Endocrine Dysfunction. By James D. Hardy, M.D., F.A.C.S., Assistant Professor of Surgery, University of Tennessee Medical College, Memphis. Cloth. $5. Pp. 153, with 43 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1952.

The author's point of view is well summarized in Dr. Ravdin's foreword: "This is not a handbook of preoperative and postoperative care. It is, however, a volume which provides the physiologic basis for many types of surgical therapy. It gives further evidence of the abnormalities of function imposed by disease and injury. Certain of these circumstances are of a complex nature, but the author has presented his material as simply as possible.

"Numerous of the subjects which Dr. Hardy has covered will require further intensive investigation before they are completely understood. He has, however, brought all available material together which can be accepted at this time, and this in itself is an achievement of real merit. His bibliographies are excellent."

The scope of the author's interest is inclusive as far as the glands of internal secretion are concerned. Surgical techniques are given relatively little space, so that the reader can get a condensed understanding of the physiological problems involved. This physiological aspect is well condensed and is accurately and lucidly stated, and the entire text is well illustrated, many of the illustrations being photographs or artists' drawings of surgical aspects. This volume should prove genuinely interesting and helpful to thoughtful surgeons and other medical men who desire to read a condensation of current concepts of clinical endocrinology.

A Handbook for the Blind. By Juliet Bindt, Home Teacher for Blind, California State Library, San Francisco. Cloth. $3.50. Pp. 244. The Macmillan Company, 60 Fifth Ave., New York 11, 1952.

The problem of rehabilitation of the blind is primarily concerned with the psychological aspects of self-confidence and the physical means necessary for the blinded person to adjust himself as normally as possible to a seeing world. Like many others who have been successful in this work, the author of this book is blind. Through her own experiences she has been able to formulate many rules and make numerous practical suggestions that should prove extremely helpful, particularly to the newly blinded subject. She advocates as much independence as possible, prefering to do without a guide dog or white cane. Dogs for the blind have been publicized and dramatized, and, although in some cases they are extremely helpful, they are not always desirable. The requirements and adaptability of the person must be considered most carefully in arriving at a decision in this matter. Although the author does without a cane, the experiences in rehabilitation of those who were blinded during the war indicate that in most instances a lightweight cane of adequate length, when used with the proper technique, is an invaluable aid in getting about independently and avoiding obstacles.

The major portion of the book deals with practical and ingenious suggestions to assist the blind person in identifying clothing, maintaining personal appearance, eating at the table, going out alone, using a guide dog, shopping, homemaking, caring for the baby, carrying on business, writing letters, learning raised type, spending leisure time, using sighted assistance, and performing literally thousands of daily tasks. A special chapter deals with the difficult problem of the deaf-blind. Both Braille and Moon types are described and their great value emphasized, although it is recognized that many persons never succeed in mastering these methods of communication.

The final portion of this book is directed toward persons who can see and discusses their relations with the blind, especially as concerns those things that should not be done. Persons who have had no contact with the blind are apt to be self-conscious when undergoing their first experience in such a relationship and, consequently, may be at a loss as to how much should be done to assist the handicapped person. Reading this handbook would greatly facilitate a normal relationship.

This book should be helpful to every blind person and those in close contact with them and also to everyone who deals with the blind and who by a better understanding of the psychological aspects of the problem can contribute in some small measure to their rehabilitation.

Child Rorschach Responses: Developmental Trends from Two to Ten Years. By Louise Bates Ames, Ph.D., Director of Research, Gesell Institute of Child Development, New Haven, Janet Learned, M.A., Director of Preschool Service, Ruth W. Métraux, M.A., and Richard N. Walker, M.A. Cloth. $7.50. Pp. 310. Paul B. Hoeber, Inc. (medical book department of Harper & Brothers), 49 E. 33rd St., New York 16, 1952.

The early investigators of the Rorschach technique soon discovered that the records of children differed in many ways from those normally produced by adults. When interpreted by adult standards, children's records had such a distinct pathognomonic character that many of the investigators considered the Rorschach test invalid for use with young children.

In recent years, the great amount of literature on the subject indicates that there has been a marked increase in the number of studies done on children with the Rorschach technique. Much of the evidence from these studies is conflicting, so the authors of this book undertook this investigation to determine how valuable the technique can be in studying the individual child and developmental trends in general.

The authors, all from the Gesell Institute of Child Development, analyzed the scores of 650 separate Rorschach protocols. There were 50 records at each half-yearly level between 2 and 5½ years and 50 records from each yearly level from 6 through 10 years. The subjects studied were a fairly homogenous group of American children who were of above average intelligence.

The results of this investigation reveal the extent to which the commonly scored determinants occur during each age period. This establishes children's norms, which should prove more valuable than the adult norms that had formerly been used for children. The results also give the percentage of subjects who use each of the variables, the extent to which sex differences occur in performance, and the behavior patterns that are characteristic for each age level.

These findings are of great potential value for the solution of the problem of maturation versus individual factors in childhood development. During certain periods of the life span, maturity factors are so dominant that it is often extremely difficult to distinguish the unique individual pattern in a given child's personality. If, as this study indicates, the Rorschach can get at the basic developmental structure in the child, then it can be of great value to both the clinician and the developmental psychologist. The clinician can get at the individuality of a child and compare him with others of his own age. The developmental psychologist can discover the basic trends that manifest themselves in all human maturation.

The book is not an introductory manual on Rorschach procedure and assumes familiarity on the part of the reader with at least one of the more common scoring systems. This study is one of the most comprehensive and objective longitudinal studies that has been done and offers great promise to those interested in the science of personality.

The Management of the "Hopeless" Case. By C. J. Gavey, M.D., F.R.C.P. Buckston Browne Prize Essay, Harveian Society of London, 1950. Cloth. 9s. Pp. 45. H. K. Lewis & Co., Ltd., 136 Gower St., London, W.C.1, 1952.

This attractive essay was awarded the Buckston Browne Prize of 1950, by the Harveian Society of London. A reproduction of the Buckston Browne Medal showing a splendid engraving of William Harvey (1578-1657) appears on the frontispiece, giving distinction to the volume.

The author's approach to the subject is largely of a philosophical nature. He obviously has given much thought to a major responsibility of the physician that is rarely discussed in the medical literature. The management of the morale of the patient suffering from a hopeless affliction as well as that of the family frequently becomes a distressing and difficult obligation for the physician. How well he meets his obligation he will be able to determine after reading this essay.

The actual physical care of the patient, comprising diet, drugs, and nursing, is dealt with briefly as are the various surgical procedures on the brain and central nervous system for the relief of pain. Perhaps this was the intent of the author, or it may well have been the result of the limitations imposed in the preparation of an essay on such a comprehensive subject. It is an important contribution by the publisher.

Management of the Newborn. By Arthur Hawley Parmelee, M.D., Professor of Pediatrics, University of Southern California School of Medicine, Los Angeles. Cloth. $7. Pp. 358, with 45 illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1952.

The author of this book has had much experience with the newborn services at the Cook County Hospital and the Presbyterian Hospital in Chicago. He also has been responsible for creating and stimulating interest in the newborn infant, both in the medical student and in the pediatrician. The author does not attempt to cover all that is known about the subject. As he puts it, he would rather tell what sort of person the newly born infant is and "why he is what he is; what his peculiar problems are and what is indicated in the rational care." He handles the subject as a clinician. There are 10 chapters; in them he discusses the fetus, characteristics of the newborn infant, the premature infant, the general care and management of the newborn infant, and the abnormalities and disturbances caused by prenatal factors and birth processes. He also discusses acquired infections and other postnatal hazards. This book is largely written on the clinical experience of the author, but a liberal bibliography is quoted. The book is well written, easy to follow, and should be a valuable addition to the library of the pediatrician, obstetrician, and general practitioner.

The Alkaloids: Chemistry and Physiology. Volume II. Edited by R. H. F. Manske and H. L. Holmes. Cloth. $14.50. Pp. 587. Academic Press, Inc., 125 E. 23rd St., New York 10, 1952.

The first volume of this set was reviewed in THE JOURNAL Sept. 30, 1950. Volume II, like Volume I, is clear and thorough, and it, too, contains extensive tables listing the properties of alkaloids and their derivatives and degradation products. It also is confined to the chemistry of alkaloids. Physiological and pharmacologic properties will be covered in Volume V.

Volume II has chapters on the alkaloids related to morphine, Amaryllidaceae, acridine, indole, and Erythrina, and on sinomenine and colchicine. Most of the bibliographies list publications dated 1950, but still the editors "are apprehensive . . . that some chapters . . . [were] out of date at the time of printing." Extra chapters were added on morphine alkaloids and strychnine alkaloids while the book was being printed in an effort to meet this objection. The heavy paper and strong binding of this work guarantee it a long shelf life.

Biochemistry for Medical Students. By William Veale Thorpe, M.A., Ph.D. Fifth edition. Cloth. $6. Pp. 528, with 41 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5, 1952.

Dr. Thorpe calls this work a text for medical students, but it will be of great interest to physicians who have been unable to keep up with the enormous current output of the biochemists. The book has been almost completely rewritten in order to place in perspective the discovery of the Krebs' tricarboxylic acid cycle, to incorporate new findings about the nature and action of enzymes, the amino acid content of proteins, nutritional requirements of humans, and the chemistry of vitamins and hormones, and to include a chapter on tracer studies. The organization of material is logical, and the writing is good. Naturally, the terminology is British. The printing and binding are also good, but the paper reflects the continuing shortage of rag stocks in England. The index is exceptionally easy to use because of its typography.

Introduction to Clinical Neurology. By Gordon Holmes, M.D., F.R.S. Second edition. Cloth. $4. Pp. 189, with 43 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1952.

In this edition the few changes that have been made are for the purpose of making descriptions simpler and clearer. There are a few monographs in every field that become classics; this small publication is one of them. Although the author describes the book as an introduction and although it is relatively short, each of the chapters is an individual essay. The chapters on the motor system, on muscle tone and coordination of movement, and on the visual system have never been surpassed. This volume is one that can be fully appreciated only by those who have spent some years in this field. The more experienced in clinical neurology the reader is the more he will appreciate this monograph.

QUERIES AND MINOR NOTES

POSTNASAL DRIP

TO THE EDITOR:—*One of the commonest ailments of mankind is the postnasal drip, the profusion of mucus that accumulates exactly at the point of gag reflex in the nasopharynx. Day after day the victims of an "inconsequential" affliction go through hours of discomfort from nausea and vomiting until the mucus can be dislodged from the gag reflex area and expectorated. Is there any successful treatment for this condition? I have done innumerable patch tests, used all the antihistaminics, and forbidden smoking and the use of condiments, all to no avail. The picture of the otherwise healthy patient who every morning and often several times daily must cough, gag, and vomit because of a localized accretion of mucus is a sad commentary on modern medical practice. We make much of our progress against cancer and other diseases, but the thousands of persons condemned to their daily vomiting spell find no surcease because theirs is not a killing illness. Is there not someone in our profession who knows the answer?*

M.D., New Jersey.

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—Postnasal "drip" results, in general, from one of three underlying conditions: a defective mucosa (due to atrophy, hyperplasia, or glandular deficiency); distortion of the air currents, causing loci of dryness; infection, usually in the sinuses. Treatment, to be effective, must combat the cause. (For a complete discussion of the problem see Proetz, A. W.: "Postnasal Drip": Current American Nightmare, *Ann. Otol. Rhin. & Laryng.* **54**:739 [Dec.] 1945.) An aqueous solution containing 0.9% sodium chloride, 6% glycerine, and 4% alcohol, with 2 or 3 drops of perfumed spirit added for freshness, is helpful; about 10 drops are put in each nostril four times daily.

ANSWER.—In deciding appropriate therapy for postnasal "dripping" the probable causative factors must be known. 1. It was formerly considered to be a sign of paranasal sinus disease. If the discharge found in the nasopharynx shows purulent characteristics, paranasal sinus disease must be ruled out. Any of the sinuses may be the source of the discharge, but the sphenoid sinus is the most likely source. 2. In addition, an infected adenoid mass may be the cause. Infection with Klebsiella must be considered, especially if crusting is present; streptomycin therapy is effective in this event. 3. Granular pharyngitis and hypertrophy of lateral pharyngeal bands are common causes. These conditions respond well to the ingestion of iodides over a long period. Occasionally electrocoagulation is required. 4. Certain robust young adults, even those who live an outdoor life in all kinds of weather, complain of the symptom. It is especially prevalent in those who live in a humid environment, such as that found in the coastal regions. The nasal and pharyngeal membranes are hypotrophic and hyperactive and secrete a larger amount than can be used physiologically. The amount of secretion in a normal young adult may range from a pint to a quart during a 24 hour period. This secretion collects in the nasopharynx during the sleeping period and is removed on arising. Many persons form the habit of removing all the secretion and are loath to swallow any part. It may become an obsession. Actually no deleterious effect comes from swallowing the mucus. The habit of forcibly clearing the pharynx increases the secretion in amount and aggravates the condition. In a warm dry climate, the symptoms would be cleared by a natural physiological process. Trial of such a climate should be advocated if the complaint is distressing. 5. Other infrequent causative factors in certain persons are the ingestion of large amounts of milk and excessive ingestion of alcoholic beverages. 6. The symptom usually becomes less troublesome with increasing age owing to secondary atrophy of the secreting membranes. 7. It is certain that the symptom may be an evidence of allergy, even though the antihistaminics are not effective in relieving the symptoms.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

VITAMIN B BEFORE ATHLETIC CONTESTS

TO THE EDITOR:—*What is the accepted opinion concerning parenteral administration of vitamin B and vitamin B complex to athletes immediately before competitive contests to improve their vigor or pep?*

M.D., Arizona.

ANSWER.—It is presumed the question refers to administration of vitamin B and vitamin B complex to amateur athletes engaged in school contests in college and high school or in amateur athletic contests of community sponsored teams not associated with schools. In athletics of this character there has developed an attitude among certain supporters and contestants that winning at any cost is an acceptable goal. This has caused the development of technical steps to produce an artificial stimulation or permit the exhibition of strength or speed beyond that normally possible in a nonstimulated athlete. The administration of vitamin B and vitamin B complex immediately before competitive contests to improve vigor or pep in the contestants would appear to be in the same class as the breathing of oxygen by swimmers immediately preceding the starting gun and even analagous to the injection of various chemicals into race horses immediately before a race. It is a means for artificially winning a contest that the contestant might otherwise be unable to win. Irrespective of the physiological effect on the individual player, this practice could be deprecated on moral grounds.

From the strictly medical point of view, Dr. S. H. Juros and his associates recently reported to the American College of Allergists that the excessive use of thiamine hydrochloride may cause serious circulatory disturbances and produce a reaction similar to that produced by histamine. It is believed, however, that the effect of the vitamin B complex is not immediate, and, therefore, any improved vigor or pep in contestants receiving vitamin B parenterally immediately before a contest would probably be a psychological stimulation with a purely psychological effect in the production of higher levels of accomplishment. At best, this is poor medicine, worse sportsmanship, and an extremely destructive philosophy to teach our youth.

A DEPLORABLE OBSTETRIC PRACTICE

TO THE EDITOR:—*We use nitrous oxide, ethylene, and cyclopropane gases in our obstetric anesthesia. In a recent discussion, a statement was made that cyclopropane should not be used to keep a woman asleep for more than 15 minutes while she is in labor, because it is dangerous for the baby and would cause the baby's death if used longer. This discussion came about because some members of our staff live 20 miles from the hospital, and the anesthetist has given patients who were about to deliver enough anesthetic to prevent delivery until the physician arrives. Please clarify this point.* *M.D., Alabama.*

ANSWER.—All the anesthetics listed are safe if used with sufficient oxygen, but any anesthetic depresses the baby to some extent and suppresses respiratory efforts in proportion to the amounts given. This danger is increased if sedatives have been used. Of utmost importance, however, even above the use of the anesthetic, is maintenance of proper oxygenation of the fetal blood. Anoxia is the thing to be feared in the fetus, as it may lead to death of brain cells. The practice of preventing a patient's delivering at her appointed time by anesthetic, saddle block, or forceful holding is to be deplored. Students should be taught and interns and residents instructed to deliver the patient if such an emergency arises. Having one physician at the hospital at all times, on a rotation basis, if interns are not available, would prevent this evil.

POST-TRAUMATIC IRRITABILITY

TO THE EDITOR:—*What is the explanation for the irritability found in post-traumatic states, especially after head trauma? Is sensitivity to noise in post-traumatic neurosis a manifestation of the general irritability or of localized tension in the tympanic muscle?*

Edward Dengrove, M.D., Asbury Park, N. J.

ANSWER.—Irritability after head trauma is one of a group of common sequelae, including headache, vertigo, difficulty in concentration, retrograde loss of memory, nervousness, fear, personality changes, and intellectual impairment, that may occur after cerebral concussion. Irritability may be associated with aggressiveness and euphoria. The exact mechanism of the physiological effects of concussion is unknown, and this applies especially to irritability, a symptom of somewhat vague connotation that cannot be easily evaluated in either man or animal. Many investigators have shown, however, that the responses classified as post-traumatic neurosis are usually independent of the occurrence of gross signs of damage, such as meningeal or petechial hemorrhages or contusions of the brain. At one time it was thought that even the histological examination of nerve cells of animals dying of concussion or killed a few hours after concussion revealed no changes and that the blood vessels remained unaltered. In most instances, these observations, as pointed out by Denny-Brown, were based on ordinary histological sections and not on the finer studies or technique, such as that devised by Cajal and his associates. Recently, Courville found various stages of degeneration in nerve cells and fibers, as were noted by Cajal in experimental animals, in his own cases of trauma to the human brain. Groat and his associates, using the standard controlled Nissl technique on animal brains subject to concussion, found histological changes developing in nerve cells some days after trauma, indicating that possibly some of the remote symptoms develop on the basis of nerve cell changes some time after the concussion occurs.

Structures other than primary nerve cells may be involved in the concussion syndrome. Neuroglia were thought by Cajal to be particularly mobile and at times, when relaxed, they appeared to him to separate from their associate cell bodies and thus possibly interrupt function. This prediction, made many years ago, has recently found possible confirmation in the study of pulsatile glial cells in tissue culture by Lumsden and Pomerat. They were able to grow oligodendrocytes, the most numerous of brain cells, and demonstrated their rate of pulsation at about five minutes for each contractile cycle. At the present, the significance of this rhythmical activity is a subject only for speculation. We know little about the function of these cells, except that it may be associated with the metabolism of myelin. If myelin acts as an insulating substance, its loss might lead to irritability after trauma, a form of activity akin to increased reflex response seen in cases of multiple sclerosis, which is characterized by myelin destruction.

The exact physiological explanation of irritability, therefore, remains unknown at present. Investigation of nerve cells and their metabolism, especially work on tissue culture, such as that carried on by Lumsden and Pomerat and others, may soon provide the research worker with a usable tool for investigation of the effect of injury and drugs on nerve cells and thus lead to a disclosure of the mechanism of irritability. It has not been shown that sensitivity to noise in post-traumatic neurosis is a manifestation of a localized tension of the tympanic muscle. The evidence seems to indicate that it is a part of the general syndrome of irritability.

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SYPHILIS AND DELAYED UNION OF FRACTURES

TO THE EDITOR:—*What role, if any, does syphilis play in the delayed union of fractures? A coal mining company usually will not employ men having positive reactions to the Wassermann and Kahn tests, feeling that past experience with several cases of delayed union of fractures in these men justifies this action. I feel that unless tertiary syphilis is present, these men should be hired and given treatment. Please discuss this matter.*

M.D., New Mexico.

ANSWER.—There is no evidence that syphilis plays any part in delayed union or nonunion of fractures. In a patient with tabes dorsalis, a neuropathic degeneration may appear at the site of a fracture, but this is not true unless the patient has tabetic involvement of the spinal cord. The situation regarding the relationship between syphilis and ununited fractures is discussed by J. E. Moore (The Modern Treatment of Syphilis, ed. 2, Springfield, Ill., Charles C Thomas, Publisher, 1943, p. 471) and by Stokes, Beerman, and Ingraham (Modern Clinical Syphilology: Diagnosis, Treatment, Case Study, ed. 3, Philadelphia, W. B. Saunders Company, 1944, pp. 780 and 809). A positive reaction to a serologic test for syphilis is not a sound reason for rejection for employment because of the possibility of delayed union of fractures. Such delayed union occurs as often in persons without syphilis as in those with it.

SODIUM CHLORIDE IN WATER SOFTENERS

TO THE EDITOR:—*Is there a decrease in the sodium ion concentration in water softened for home use by permutit® or zeolite water softeners? What is the function of sodium chloride in these water softeners?*

R. W. Mueller, M.D., Del Mar, Calif.

ANSWER.—The permutit® water softening process generally refers to cation exchangers of the hydrated sodium aluminum silicate type. The zeolites may refer to both the hydrated sodium aluminum silicate exchanger or to a variety of resins prepared synthetically or from natural sources such as coal, lignite, or peat. In all the softeners for home use, the "hardness ions" such as calcium, magnesium, iron, and other +2 ions are taken up by the permutit® or zeolite and an equivalent amount of sodium ions is introduced into the water. The softened water will therefore have a concentration of sodium ions greater than that of the original water, the increase in concentration being chemically equivalent to the number of "hardness ions" present in the original water, if the efficiency of the exchanger is 100%.

When an exchanger has lost its efficiency because of the replacement of the sodium ions by the "hardness ions," it can be regenerated by passing a sodium chloride solution through it. The concentration of sodium ions in the regenerating solution is sufficiently large to reverse the softening reaction, and the "hardness ions" are replaced by sodium ions in the exchanger. The excess brine is washed away and the water softener is again ready for use.

ARTIFICIALLY SOFTENED WATER

TO THE EDITOR:—*We have installed a water softener at home through which all of the water, cold and hot, passes. The chemical analysis of the water now is chlorides, 440 ppm. Cl; alkalinity to phenolphthalein, 15 ppm calcium carbonate, and to methyl orange, 245 ppm calcium carbonate; and total hardness, 0 ppm calcium carbonate. Is there any reason for not using the water for drinking and cooking? Would it contribute any less to good health than unsoftened water?*

M.D., Illinois.

ANSWER.—Millions of our citizens regularly drink artificially softened water without objectionable consequences. It is true that some salts in water are absorbed and enter the body economy, but that source of mineral supply is negligible. The consensus of water supply engineers is that one may drink any properly softened water, relying on suitable food intake for proper mineral balance within the body.

TESTS FOR CORONARY INSUFFICIENCY

To the Editor:—*In a letter in* The Journal *May 3, 1952 (page 98), Dr. Simon Dack takes exception to a statement I made in a previous letter to* The Journal *pointing out the dangers that may be encountered in doing the exercise test. I wish to call attention to the answer to a query in* The Journal *Sept. 1, 1951, regarding tests for coronary insufficiency. It states: "Both tests [the Levy anoxemia and the Master exercise tests] should be conducted only by well qualified physicians because of the inherent danger of producing arrhythmias and even myocardial infarction." It further states: ". . . the exercise, once performed, may continue to increase the work of the heart even when the exercise is stopped." This comment has been substantiated by many clinical experiences. Dr. Frank N. Wilson reported the case of a 46-year-old man who had normal control electrocardiograms and who died within half an hour after an exercise test was performed. In the same paper, Dr. Wilson stated: "We had two patients die rather quickly after induced attacks of anginal pain and we are rather cautious in experimenting with these patients." (Wilson, F. N., and Johnston, F. D.:* Tr. A. Am. Physicians **54**:*210, 1939). Drs. Rossier and Spuhler reported 3 patients, 35, 44, and 52 years of age, respectively, all of whom had normal control electrocardiograms, who died during or shortly after exercise tests (Rossier, P. H., and Spuhler, O.:* Cardiologia **11**:*60, 1946). I do not mean to depreciate the importance and need for diagnostic stress tests in certain unproved cases of coronary insufficiency. Rather, I wish to impress those who would perform the tests that they are not without hazard. In my original letter I wished merely to express the opinion that, because of the mechanisms involved in the various tests in the production of coronary insufficiency, the ergonovine maleate test has a greater margin of safety than the anoxemia or the exercise test, because the effect of the drug is rapidly produced and can be promptly nullified (Stein, I., and Weinstein, J.:* J. Lab. & Clin. Med. **36**:*66, 1950).*

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ANOREXIA NERVOSA

To the Editor:—*In* The Journal *May 17, 1952 (page 314), the reply to a query entitled "Anorexia Nervosa" is, in my opinion, unsound. The query states that the 4-year-old girl "does not want to eat; two or three glasses of milk a day satisfy her." She complains of stomach pain; roentgenograms of the chest and abdomen are normal; there has been no weight loss; and she is "extremely nervous." The consultant believes that the symptoms are those of anorexia nervosa. The "American Illustrated Medical Dictionary" (Dorland, W. A. N.: ed. 22, Philadelphia, W. B. Saunders Company, 1951) defines anorexia nervosa as a condition in which the patient "loses his appetite and systematically takes but little food, so that he becomes greatly emaciated." The consultant advises that management should include "removing environmental factors that are likely to induce anxiety or tension in the child. If the parents are unable to assume an attitude of unconcern, the difficulty may often be surmounted by placing the child in the care of a calm relative or stranger who will not be intimidated; this is true particularly in cases in which the child is attempting to dominate the parents. . . . Time and patience are usually the greatest aids in overcoming this problem."*

Not a word is mentioned regarding study of a possible personality disorder, which may be a cause of the nervousness and the tendency to want to dominate the parents. Removal of "environmental factors" is not adequate. The trouble may lie, instead, in the fact that not enough environmental factors, such as affection, security, and outlets for aggression, have been added. It is regrettable that the consultant would arbitrarily advise separating an emotionally ill child from parents who are unable to maintain unconcern toward her poor appetite, one of the symptoms, and place her with someone who would not be "intimidated," signifying, of course, one who will be indifferent or callous. Is it not possible that the nervousness is based, in part at least, on long standing feelings of rejection by the parents? If so, augmenting such feelings obviously is not the indicated psychotherapeutic procedure. To advise that "time and patience are usually the greatest aids in overcoming this problem" reveals a disregard for the voluminous mental hygiene literature that emphasizes the paramount importance of prophylaxis in mental illness. Freud often pointed out that adult neuroses are almost invariably based on emotional disorders appearing in childhood, and there is general agreement among psychiatrists that a child does not usually "get over" his mental illness with the help of time. The symptoms may only assume different patterns as time passes.

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ETHYLENE AND CYCLOPROPANE ANESTHESIA

To the Editor:—*The misconceptions about ethylene and cyclopropane in Queries and Minor Notes in* The Journal *May 3, 1952 (page 96), should not go uncorrected. I shall discuss the more glaring errors.*

Precautionary measures against fire and explosion are properly mentioned, but "especially the Horton intercoupler" is an unfortunate phrase. The intercoupler is the least important of precautionary measures. Its construction involves a long chain, each link of which must be perfectly clean and in perfect contact with each of its adjacent links for proper function. Since a "weak link" is almost always present, the greatest contribution of the equipment is a false sense of security. The phrase objected to should be amended to read ". . . especially a careful man." The statement is made that "Use of cyclopropane usually is avoided in patient with cardiac disease, whereas ethylene is the anesthetic of choice in such patients." This is incorrect in its entirety. Cyclopropane is an excellent anesthetic agent in the presence of most types of cardiac disease, whereas ethylene, requiring reduction of inspired oxygen to 20%, is undesirable.

The impression is given that ethylene is less dangerous than cyclopropane because the fact that it is given in a mixture of 80% ethylene and 20% oxygen ". . . tends to put it out of the explosive range." This tendency is apparently the result of the difference between the 80% mixture recommended and the 79.9% limit of the explosive range. No mention is made of the fact that the density of ethylene (0.97) tends to cause stratification of this gas in air so that it may be ignited at a point many yards away or of the fact that the source of ignition of cyclopropane must be within a few inches of its point of escape into the room. A source of ignition as close as 37 cm. will not ignite cyclopropane.

"Cyclopropane shock" is mentioned as occurring when this gas is used without ether or without nitrous oxide-ether induction. The so-called cyclopropane shock is in reality the consequence of poor elimination of carbon dioxide; ether helps only in that it improves somewhat the respiratory exchange and hence the carbon dioxide elimination. Properly assisted or controlled respirations achieve this result much more satisfactorily. To use nitrous oxide-ether induction prior to cyclopropane anesthesia is to defeat one of cyclopropane's greatest advantages, i. e., a smooth, pleasant, rapid, nonhypoxic induction, while adding absolutely no protection against "cyclopropane shock."

In three years of almost daily use of cyclopropane in all types of surgery from skin biopsy to intracardiac procedures, I have encountered "cyclopropane shock" three times, in a mild and temporary degree. Of course this negligible incidence will be greatly increased if the drug is used in a careless or inept manner. The complete replacement of explosive agents in anesthesia is most desirable, but until better replacements than we now have are available, cyclopropane and ether, each in its own place, will remain with us.

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